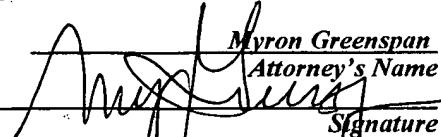


IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

MAILING CERTIFICATE

I hereby certify that this correspondence is being deposited with the United States Postal Services as first-class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, on the date indicated below:

5620
11/19

Myron Greenspan
Attorney's Name
Signature
October 10, 1997
Date

Applicant hereby petitions that any and all extensions of time of the term necessary to render this response timely be granted. Costs for such extension(s) and/or any other fee due with this paper that are not fully covered by an enclosed check may be charged to Deposit Account #16-0100.

Applicant: TOKMULIN et al.

RECEIVED

Serial No.: 08/860,763

10 DEC 1997

Filing Date: July 11, 1997

Legal Staff
International Division

Group / Art Unit:

Examiner:

Title: Device for Treating Planar Element with a Plasma Jet

11/06/1997 Docket No.: P-9701 ISK
01 FC:122 ASWAIN 00000043 08860763

130.00 up

Assistant Commissioner for Patents
Washington, D.C. 20231
Attn: Office of Petitions

**PETITION THAT DECLARATION BE ACCEPTED
UNDER 37 CFR Ch. 1, 1.47
ABSENT TWO INVENTORS' SIGNATURES**

SIR:

Applicant and Assignee in this Application, Az Corporation, having sufficient proprietary interest, by its attorneys of record, hereby petitions that the Declaration and Power of Attorney in the above captioned U.S. Patent Application be accepted despite the absence of the signatures of two of the seven individuals listed as inventors in the above-captioned application and in the

Patent Application of TOKMULIN et al.
Serial No.: 08/860,763

previous PCT Application No. PCT/RU95/00063. Applicants respectfully request that the seven Declarations attached hereto be considered in support of this Petition; in support of the fact that due diligence was exercised in vigorous attempts to obtain the signatures of the two missing inventors; in support of the fact that the Assignee in this Application has a clear proprietary interest in the invention described and claimed therein; and in support of the fact that the Assignee would be irreparably damaged if this Petition were not to be granted.

Applicants through their attorneys of record further petition that the Assignment in this Application be accepted and recorded by the U.S. Patent and Trademark Office despite the fact that it is missing the same two signatures that are absent from the Declaration and Power of Attorney.

There are seven inventors in the above captioned U.S. Patent Application. All seven inventors signed the Declaration for the underlying PCT Application No. PCT/RU95/00063, on which the present Application is based and on the basis of which it claims priority. Az Corporation is the Assignee of the underlying PCT Application and is identified on the U.S. Assignment forms submitted herewith for recordation.

The due date for filing the National Phase Patent Application in the United States was July 13, 1997. When the attorneys of record were asked to locate and obtain signatures for the seven inventors listed in the PCT Application, they discovered that two of the inventors, Mr. Sinyagin

and Mr. Antropov, although they lived in the U.S. and were available through contact with another inventor, Mr. Tokmulin, refused to have any contact with attorneys of record and refused to sign the Declaration and Assignment in the U.S. Patent Application.

The Application was filed in the U.S. on July 11, 1997, with an unsigned Declaration. On August 18, 1997, the attorneys of record received a Notification of Missing Requirements Under 35 U.S.C. 371 in the United States Designated/Elected Office (DO/EO/US) dated August 12, 1997, giving the due date for submission of the signed Declaration as September 12, 1997. Applicants through their attorneys of record are requesting an extension of one month for responding to this notification and have submitted the appropriate fee therefor. They are now timely filing the Declaration and Power of Attorney, with five of the seven inventors' signatures; this Petition; and seven Declarations in support of this Petition.

The seven Declarations in support are as follows:

- (1) Declaration of Facts of Adrienne Shirley in Support of Filing on Behalf of Omitted Inventors (Under 37 CFR 1.47), signed by Adrienne Shirley, an employee of Lackenbach Siegel Marzullo Aronson & Greenspan, P.C., Applicants' attorneys of record herein, in support of claim that due diligence was exercised in attempt to obtain all signatures on the Declaration and Power of Attorney and the Assignment in this Patent Application;

- (2) Supplemental Pages to Combined Declaration and Power of Attorney by Person with Sufficient Proprietary Interest on Behalf of the Two Omitted Inventors Who Have Refused to Sign or Cannot Be Reached (According to 37 CFR 1.47(b)), signed by Vyacheslav A. Arkhangelsky, General Director of Az Corporation;
- (3) Declaration Establishing Proprietary Interest by Person Signing on Behalf of Omitted Inventors, signed by Vyacheslav A. Akhangelsky, General Director of Az Corporation;
- (4) Declaration of Facts in Support of Filing on Behalf of Omitted Inventors (37 CFR 1.47), signed by Vyacheslav A. Arkhangelsky, General Director of Az Corporation;
- (5) Declaration by Person Having First Hand Knowledge That Aleksandr Mikhailovich Antropov Was Employee or Otherwise Obligated to Entity with Sufficient Proprietary Interest When Invention Was Made, signed by Boris Mikhailovich Balats;
- (6) Declaration by Person Having First Hand Knowledge That Oleg Vyacheslavovich Sinyagin Was Employee or Otherwise Obligated to Entity with Sufficient Proprietary Interest When Invention Was Made, signed by Boris Mikhailovich Balats;
- (7) Declaration of Law, signed by Elena A. Gavrilova, Director General of Iskona-II, Assignee's patent law firm in Moscow, Russia, with two (2) attachments, excerpt from relevant Russian patent law and copy of original Russian Application No.

2,075,135..

The Exhibits to documents (2) through (6) are as follows:

Exhibit A: License and Option Agreement between Az Corporation and GaSonics International Corporation re: the use of plasma jet technology (in Russian and English);

Exhibit B: Letter to O. V. Sinyagin dated October 4, 1994, requesting explanation of various issues (in Russian and English);

Exhibit C: Application of A. M. Antropov for full-time employment at Az Corporation beginning June 1, 1991 (in Russian and English);

Exhibit D: Soviet government order for the employment of A. M. Antropov as a senior research worker at Az Corporation dated June 3, 1991 (in Russian and English);

Exhibit E: Employment contract between A. M. Antropov and Az Corporation for the period January 21, 1994, through January 20, 1995 (in Russian and English);

Exhibit F: Agreement Regarding Confidentiality of Secrets between A. M. Antropov and Az Corporation dated January 21, 1994 (in Russian and English);

Exhibit G: Announcement by the Director of Az Corporation dated December 28, 1993, regarding the safekeeping of secrets and protection from unfair competition (in Russian and English);

Exhibit H: List dated December 28, 1993, of information and materials constituting commercial and other secrets of Az Corporation signed by the Deputy Director General (in Russian and English);

Exhibit I: Agreement between A. M. Antropov and Az Corporation regarding work fulfilment and compensation for the period June-July 1991 (in Russian and English);

Exhibit J: Schedule for the development and production of the plasma generator, the subject of the present invention, written by hand by O. V. Sinyagin (in Russian and English);

Exhibit K: Application for a patent in the Russian Federation for the "Device for Treating Planar Elements with Plasma Jet" dated January 13, 1995 (in Russian and English);

Exhibit L: Power of Attorney by O. V. Sinyagin entrusting Iskander Malikovich Tokmulin to sign on his behalf applications for patents co-invented by Mr. Sinyagin, dated January 1, 1995 (in Russian and English);

Exhibits M-R: Copies of invoices and specifications for the contracts for the components that Az Corporation had to purchase to make possible the inventing of the plasma jet device;

Exhibit S: Application of O. V. Sinyagin to be employed at Az Corporation signed April 29, 1991 (in Russian and English);

Exhibit T: Soviet government order for the employment of O. V. Sinyagin as a senior research worker at Az Corporation dated May 1, 1991 (in Russian and English);

Exhibit U: Employment contract between Az Corporation and O. V. Sinyagin for the period from January 21, 1994, through January 20, 1995 (in Russian and English);

Exhibit V: Agreement Regarding Confidentiality of Secrets between O. V. Sinyagin and Az Corporation dated January 21, 1994 (in Russian and English);

Exhibit W: Agreement between O. V. Sinyagin and Az Corporation regarding work fulfilment and compensation for the period May 1 - July 30, 1991 (in Russian and English).

Applicants respectfully request that these Declarations and their attachments be considered. It is believed that they clearly set forth the Az Corporation's proprietary interest in this invention; the vigorous attempts made to obtain the signatures of Mr. Sinyagin and Mr.

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Serial No.: 08/860,763

Antropov on the Declaration and Power of Attorney and on the Assignment in the above captioned Patent Application and the refusal of same not only to sign such documents but even to speak with attorneys of record in this application; and the irreparable harm to the rights of the Assignee that would be done if this Petition were not granted and if the Declaration and Power of Attorney, and the Assignment, submitted herein were not accepted.

The Petition fee of one hundred thirty (\$130.00) dollars has been included in the check for three hundred thirty (\$330.00) dollars attached to the Response to the Notification of Missing Requirements in this Application. It is respectfully requested that if this amount prove to be insufficient any remainder should be charged to our Deposit Account No. 10-0100.

Applicants respectfully request that the Declaration and Power of Attorney and the Assignment in this U.S. Patent Application be accepted and that the Petition be granted.

Dated: October 10, 1997

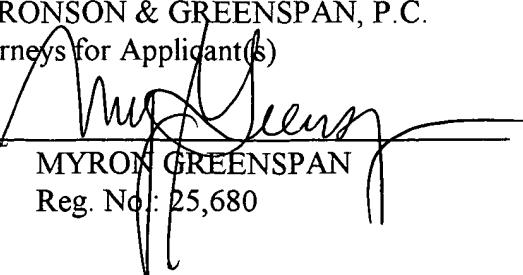
LACKENBACH SIEGEL MARZULLO
ARONSON & GREENSPAN, P.C.
Lackenbach Siegel Building
One Chase Road
Scarsdale, NY 10583
(914) 723-4300

Respectfully submitted,

LACKENBACH SIEGEL MARZULLO
ARONSON & GREENSPAN, P.C.

Attorneys for Applicant(s)

By:


MYRON GREENSPAN
Reg. No.: 25,680

MG/as

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:

TOKMULIN et al.

Serial No.:

08/860,763

Filing Date:

July 11, 1997

Group / Art Unit:

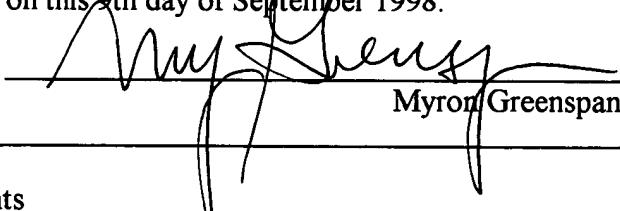
Examiner:

Title: **Device for Treating Planar Element with a Plasma Jet**

Docket No.: P-9701 ISK

Certification Under 37 C.F.R. 1.10

EM173941237US I certify that this correspondence is being mailed by Express Mail overnight to Box PCT, PCT Legal Office, Assistant Commissioner for Patents, Washington, D.C. 20231, on this 9th day of September 1998.


Myron Greenspan

Assistant Commissioner for Patents
Washington, D.C. 20231

Attn: Box PCT
Box PCT Legal Office

RENEWED PETITION UNDER 37 CFR 1.47(a):
SUBMISSION OF ALL SIGNATURES ON
(1) DECLARATIONS AND POWERS OF ATTORNEY
AND (2) ASSIGNMENTS

755.00 CP

SIR:

The Assignee in this application, through their attorneys of record, submitted a PCT National Phase application in the U.S. for the above captioned invention on July 11, 1997. The International PCT application, No. PCT/RU95/00063, was filed previously on April 11, 1995, as

Patent Application of TOKMULIN et al.
Serial No.: 08/860,763

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10 SEP 1998

Legal Staff

was the original Russian application, No. 95100180, which was filed January 13, 1995, in the International Division

The National Phase application in the U.S. was filed July 11, 1997, with an unsigned Declaration and Power of Attorney and without an Assignment. There are seven inventors in this application.

On August 18, 1997, the attorneys of record in this case received a Notification of Missing Requirements Under 35 U.S.C. 371 in the United States Designated/Elected Office (DO/EO/US) ("Notification") stating that the oath or declaration was still to be furnished to the U.S. Patent Office, along with the appropriate surcharge for providing such oath or declaration late.

To the knowledge and belief of attorneys of records, two inventors were still residing in Russia (Moscow), and the other five had moved to the United States. The Assignee in this case, Az Corporation, also located in Moscow, was able to obtain the signatures of the two inventors still residing in Russia (a copy of the Declaration and Power of Attorney and Assignment signed by these two inventors is attached).

Several of the five inventors in the United States were associated with IPEC Precision, a company in Bethel, Connecticut. Attorneys of record contacted one of them, Mr. Tokmulin, the first inventor in this application, and spoke to him about the possibility of obtaining his signature and those of the other four inventors residing in the U.S. After several conversations with Mr. Tokmulin and with Mr. Bagriy and Mr. Virovets, who were also employed at IPEC Precision, attorneys of record were able to obtain their consent to sign the Declaration and Power of Attorney and the Assignment, and in fact obtained these signed documents. A copy of this Declaration and Power of Attorney, and of this Assignment, with these three signatures, is

attached.

However, although Mr. Tokmulin stated that he knew the whereabouts of Mr. Antropov and Mr. Siniaguine, he refused to reveal their addresses and/or telephone numbers to the undersigned attorneys of record ("Attorneys"). He was willing, however, to call these two inventors on his own and urge them to either call the Attorneys or to give him permission to release their addresses and telephone numbers to the Attorneys. Mr. Antropov and Mr. Siniaguine, however, refused to call and would not release their current addresses and telephone numbers.

Therefore, in response to the Notification, Attorneys submitted the two Declarations and Power of Attorney and the two Assignments, containing in sum the five signatures they had been able to obtain, along with a Petition That Declaration Be Accepted Under 37 CFR Ch.1, 1.47, Absent Two Inventors' Signatures, with numerous attachments and declarations. (If the PCT Legal Section would like another copy of this submission, the undersigned will forward another copy of same.)

On March 16, 1998, the undersigned received a Decision on Petition dated March 12, 1998, dismissing the above Petition, and stating that the Petition must be considered under 37 CFR 1.47(a) and not 37 CFR 1.47(b). According to that rule, "it must be demonstrated that a bona fide attempt was made to present a copy of the application papers ... to the nonsigning inventor for signature" Further, the Decision stated that the Declaration to this effect that accompanied the above mentioned Petition was not adequate because it was not executed by Mr. Tokmulin, the only person who had first hand contact with the two nonsigning inventors.

Further, the Petition had not set down the last-known addresses of these inventors, but only the addresses last known to Ms. Adrienne Shirley, the declarant and a member of the staff of Attorneys' law office. The Decision stated that it was clear that there were more recent addresses known to Mr. Tokmulin. Further, no signing inventors had signed on behalf of the nonsigning inventors, and the spelling of Mr. Bagriy's last name did not correspond to that in the published PCT international application.

This Decision, dated March 12, 1998, gave a period of two months, to run until May 12, 1998, for response with a "Renewed Petition." It also stated that "extensions of time may be obtained under 37 CFR 1.136(a)."

EXTENSION OF TIME:

The Attorneys are herewith submitting the amount of \$755.00, contained within the attached check in the amount of \$835.00, in payment of a four month extension fee so that the due date for response in this case may be reset to September 12, 1998. In this amount proves to be insufficient, please charge any remainder due to our Account No. 10-0100.

SUBMISSION OF SIGNATURES OF REMAINING TWO INVENTORS:

Late in summer 1998, the Assignee in this application, Az Corporation, faxed the undersigned Attorneys with the information that Mr. Oleg Sinyagin (or Mr. "Siniaguine," as he spells his last name in English) could be contacted through a company, Tru-Si Technologies California. Az Corporation supplied the telephone and fax numbers of this company. When Mr. Siniaguine was reached by telephone at this company, he seemed amenable to signing both the Declaration and Power of Attorney and the Assignment and asked that the application as filed be

mailed to him. The undersigned Attorneys mailed the complete application as filed in the U.S. Patent and Trademark Office to him with a copy of the Declaration and Power of Attorney and a copy of the Assignment to be signed. Mr. Siniaguine signed, and then faxed and mailed these documents back to the undersigned Attorneys. This Declaration and Power of Attorney, and the Assignment, both signed by Mr. Siniaguine, is attached hereto, along with an Assignment Recordation cover sheet for processing.

The Attorneys then contacted Mr. Tokmulin again at IPEC Precision. They explained that Mr. Siniaguine had agreed to sign, and all they now needed was the signatures of Mr. Antropov. Mr. Tokmulin agreed that he would again try to convince Mr. Antropov to call a representative of the undersigned Attorneys and discuss signing these documents. In early September Mr. Antropov did call Ms. Adrienne Shirley and discussed signing the Declaration and Power of Attorney and the Assignment in this matter. He agreed to examine the application as filed in the U.S. Patent and Trademark Office, and Ms. Shirley sent him a copy of the application by Federal Express, overnight mail, along with the Declaration and Power of Attorney and the Assignment, at an address he released to her. Mr. Antropov called back upon receipt of the documents and stated that he was willing to sign, and that he would return the documents by first-class mail. The signed documents were received by first-class mail on Tuesday, September 8, 1998; however, two copies of the Declaration and Power of Attorney had been signed, and the Assignment had been left unsigned. Ms. Shirley contacted Mr. Antropov's voicemail, and he faxed a signed copy of the Assignment to her.

It is respectfully submitted that the original Decision dismissing the Petition is now overcome for several reasons.

First, and most important, a Petition is now no longer needed in the present case because all seven of the inventors have agreed to sign and have signed the Declaration and Power of Attorney and the Assignment in this case.

Second, a Declaration to support such Petition would no longer be needed because no one has to declare, any more, that they submitted the applications to the nonsigning inventors and received a refusal to sign.

Third, all seven of the inventors have released current addresses that are listed next to their names on the Declaration and Power of Attorney and on the Assignment.

Fourth, there is no longer any need for any inventor to sign on behalf of any other, as all inventors have signed.

SPELLING OF NAMES:

The Dismissal states that the spelling of Mr. Bagriy's name differs on the Declaration and Power of attorney from that listed on the PCT publication (Mr. Bagry). The undersigned respectfully submits that this is not so much a question of spelling, *per se*, but a question of transliteration. Mr. Bagriy's last name in Russian is "Багрий" – which can be variably transliterated as "Bagrij," "Bagriy" and "Bagry." Similarly, both Mr. Siniaguine and Mr. Antropov have now taken on the more "French" style of transliterating their names: instead of "Oleg V. Sinyagin" Mr. Siniaguine has chosen "Oleg V. Siniaguine," and instead of "Aleksandr M. Antropov," Mr. Antropov has chosen the transliteration "Alexandre M. Antropov."

Patent Application of TOKMULIN et al.
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It is respectfully requested that the correction or simplification of these transliteration issues be postponed until allowable subject matter is found in the application.

FEES AND SMALL ENTITY STATUS:

The attached check for \$835 is intended to cover the following fees:

\$755.00	four month extension of time;
40.00	Assignment Recordation for Mr. Siniaguine;
40.00	Assignment Recordation for Mr. Antropov.

The fees for recording the Assignments signed by Mr. Balats and Mr. Shamshurin, and by Mr. Tokmulin, Mr. Virovets and Mr. Bagriy, were submitted in October 1997.

The undersigned attorney is also submitting a Small Entity Declaration executed by Az Corporation, the assignee in this application. Thus, the applicants are entitled to the Small Entity extension fee, not the basic extension fee.

In the event that this amount is not sufficient, please charge our Account No. 01-0100.

PLACEMENT OF DOCUMENTS:

The Declarations and Power of Attorneys have been grouped together at the front of this material.

The Assignments and Assignment Recordation forms have been grouped at the back of the material, so that these materials can be readily detached and sent to Box Assignment Recordation for processing.

REMARKS

If the Petitions Examiner has any questions or comments about this submission, it is requested that he call the undersigned at (914) 723-4300.

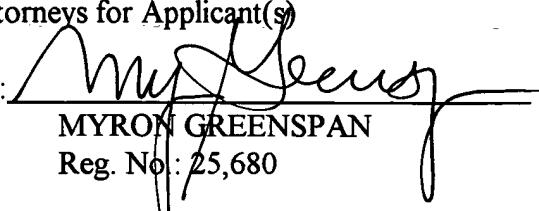
However, it is believed that all obstacles to the examination and further prosecution of this application have now been overcome. It is respectfully requested that all the documents submitted herewith and previously submitted be entered and accepted as a full or complete response to the Notification dated August 18, 1997. This application is now believed to be in condition for examination on the merits and an early Official Action on the merits is therefore respectfully solicited.

Dated: September 9, 1998

LACKENBACH SIEGEL MARZULLO
ARONSON & GREENSPAN, P.C.
Lackenbach Siegel Building
One Chase Road
Scarsdale, NY 10583
(914) 723-4300

Respectfully submitted,

LACKENBACH SIEGEL MARZULLO
ARONSON & GREENSPAN, P.C.
Attorneys for Applicant(s)

By: 
MYRON GREENSPAN
Reg. No.: 25,680

MG/as

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

MAILING CERTIFICATE

I hereby certify that this correspondence is being deposited with the United States Postal Services as first-class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, on the date indicated below:

Adrienne Shirley
Assistant to Attorney of Record
Adrienne Shirley
Signature
October 10, 1997
Date

Applicant hereby petitions that any and all extensions of time of the term necessary to render this response timely be granted. Costs for such extension(s) and/or any other fee due with this paper that are not fully covered by an enclosed check may be charged to Deposit Account #10-0100.

Applicant: TOKMULIN et al.

Serial No.: 08/860,763

Filing Date: July 11, 1997

Group / Art Unit:

Examiner:

Title: **Device for Treating Planar Element with a Plasma Jet**

Docket No.: P-9701 ISK

Assistant Commissioner for Patents
Washington, D.C. 20231
Attn: Office of Petitions

**DECLARATION OF FACTS OF ADRIENNE SHIRLEY
IN SUPPORT OF FILING
ON BEHALF OF OMITTED INVENTORS (37 CFR 1.47)**

SIR:

1. This application was filed on July 11, 1997, as Application Serial No. 08/860,763, and was described and claimed in International Application No. PCT/RU95/00063, filed on April 11, 1995.

2. This Declaration is made as to the facts that are relied upon to establish the diligent effort made to secure the execution of the Declaration by the omitted inventors, Oleg Vyacheslavovich Sinyagin and Aleksandr Mikhailovich Antropov, for the above-identified patent application before deposit thereof in the U.S. Patent and Trademark Office. Because signing on behalf of the omitted inventors is by a person or entity showing a sufficient proprietary interest, this Declaration also recites facts as to why this action was necessary to preserve the rights of the parties or to prevent irreparable damage. I make this Declaration having first-hand knowledge of the facts recited herein.

3. My name is Adrienne Shirley. I reside at 6 Chateaux Circle, Scarsdale, New York, and I am employed full-time by Lackenbach Siegel Marzullo Aronson & Greenspan, P.C., located at One Chase Road, Scarsdale, New York, on its staff. In June 1997 I was asked to assist Mr. Greenspan, one of the attorneys of record in the above patent application, in preparing this application for filing and in attempting to obtain signatures from the seven inventors of the present invention.

4. The last address of Oleg V. Sinyagin known to me is the address listed on PCT Application No. PCT/RU95/00063, 141120 Moscow region, Fryasino, Vokzalnaya St., 19-136; and the last address of Aleksandr Mikhailovich Antropov known to me is the address listed on PCT Application No. PCT/RU95/00063, 140143 Moscow region, Ramenskoye, Krasnoarmeiskaya St., 26-35.

5. On information and belief Mr. Sinyagin and Mr. Antropov were known to have resided originally in Russia and to have worked in the early and mid 1990s for Az Corporation in Moscow. When I inquired of officials of Az Corporation, the assignee in the present application and the PCT applicant, as to the present whereabouts of Mr. Sinyagin, I was told that they thought Mr. Sinyagin was now in the United States. They also stated that to their information and belief, Mr. Antropov was working at IPEC Precision in Bethel, Connecticut, U.S.A.

6. I was entrusted by Mr. Greenspan to attempt to find Mr. Sinyagin and Mr. Antropov, along with three other inventors supposed to be living in the United States and also supposed by Az Corporation to be working at IPEC Precision in Connecticut, Iskander Malikovich Tokmulin, Igor Petrovich Bagriy and Alexei Borisovich Virovets. I was asked to attempt to make contact with them and to obtain their signatures on the Declaration and Power of Attorney, and the Assignment, in the present application. The following is, to my best knowledge and belief, an accurate and complete account of my activities in attempting to obtain all seven signatures for the Declaration and Power of Attorney, and the Assignment to Az Corporation, for this patent application.

HISTORY:

7. In June 1997 one of our office's Russian legal associates, Patent Office "Iskona- II," contacted our office by fax and by airmail with a letter dated June 13, 1997, requesting that our

Patent Application of TOKMULIN et al.
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office send them the necessary forms for filing an application in the United States as the National Phase of PCT Patent Application No. PCT/RU95/00063, a National Phase application with a deadline date for filing of July 13, 1997, 31 months from the priority date. Our office sent the appropriate U.S. patent application forms to Iskona-II.

8. On July 3, 1997, our office received, by air courier from Az Corporation, a corporation established under the laws of the Russian Federation, the assignee in this PCT application and the past employer of the seven inventors in this application, the application materials for this filing, consisting of a copy of the original PCT application (in Russian), the PCT international publication of this application (in Russian) and a specification, one claim and Abstract in English translation.

9. In their cover letter accompanying these materials the officials of Az Corporation stated that they no longer had the addresses of the seven inventors and would not be able to obtain signatures of these seven inventors on a Declaration and Power of Attorney or for an Assignment. On that same day, July 3, 1997, our office sent a letter to Az Corporation by facsimile and by airmail confirming receipt of the application materials and further advising of the complicated nature of filing an application in the U.S. without a Declaration and Power of Attorney signed by all of the inventors. With that letter we enclosed a copy of the relevant regulation, 37 CFR Section 1.47.

10. Several days later Az Corporation informed our office by fax letter that it would be able to obtain the signatures of two inventors, Mr. Boris M. Balats and Mr. Vyacheslav G. Shamshurin, as these two inventors were still residing in Russia. The letter went on to state that the officials of Az Corporation would not be able to obtain the signatures of the five other inventors and that they thought these five inventors were now living in the United States. The letter stated that it was their belief that four of the remaining inventors, Mr. Iskander M. Tokmulin, Mr. Igor P. Bagriy, Mr. Alexei B. Virovets and Mr. Aleksandr M. Antropov, were now working at IPEC Precision, located at 3 Berkshire Boulevard, Bethel, Connecticut 06801.

11. By fax letter dated July 7, 1997, our office requested permission of Az Corporation to attempt to contact these four inventors at IPEC Precision in Connecticut. Upon receipt of authorization to do so, I obtained the telephone number of this company from Directory Information and was able to contact Mr. Tokmulin, Mr. Bagriy and Mr. Virovets by telephone.

12. After discussion of the situation in telephone calls through July and August 1997 Mr. Virovets consented to sign the Declaration and Power of Attorney and the Assignment and gave me his home address. That address is now listed with his name on the Declaration and Power of Attorney and on the Assignment.

13. I had one telephone conversation with Mr. Bagriy at his workplace and he expressed his willingness to sign these two documents.

14. I spoke with Mr. Tokmulin several times before this patent application was filed in the middle of July 1997, and he stated that he would be willing to "do the legwork" of speaking to the other U.S.-based inventors and attempting to persuade them to sign the Declaration and Power of Attorney and the Assignment of this patent application. He said he could approach Mr. Sinyagin and Mr. Antropov, explain the situation to them and attempt to obtain their signatures. I accepted Mr. Tokmulin as a go-between in this situation, as I had already spoken with the two other inventors employed at IPEC Precision and obtained a sense of their willingness to sign, and as it seemed clear that I had no way of reaching Mr. Antropov and Mr. Sinyagin except through Mr. Tokmulin, who was willing to act as a go-between but was not willing to give information about the whereabouts of these two inventors, as he felt very strongly that it should be their decision to divulge or not to divulge this information.

15. In a long series of telephone calls Mr. Tokmulin expressed some doubts about the success of obtaining the signatures of the remainder of the inventors in this application, including himself. After I discussed with him various aspects of the PCT patent application procedure and the procedure for filing applications in the U.S., he stated that he would consider signing both documents. He stated that although he could not provide me with information about the whereabouts of Mr. Oleg V. Sinyagin and Mr. Antropov, he would be in contact with them. He also further stated that he would ask Mr. Sinyagin to contact me at my office and that he would speak with Mr. Antropov about signing the papers.

16. Mr. Tokmulin also informed me that several of the inventors had expressed a reluctance to have their home addresses revealed on the Declaration and Power of Attorney and on the Assignment. Upon consulting with the attorneys of record in this patent application, I was able to inform Mr. Tokmulin, by letter dated July 10, 1997, that it would be acceptable to provide the U.S. Patent and Trademark Office solely with the business addresses of those inventors who did not wish to provide a home address.

17. I did not receive a telephone call from Mr. Sinyagin and so I called Mr. Tokmulin again at IPEC Precision. He was surprised to hear that Mr. Sinyagin had not contacted me and stated that he would speak with him once more. At this point I also gave Mr. Tokmulin my home telephone number in case Mr. Sinyagin would feel more comfortable calling me at home.

18. On July 21, 1997, I sent Mr. Tokmulin a letter at IPEC Precision communicating that the U.S. patent application had been filed without a signed Declaration on July 11, 1997, and enclosing copies of the Declaration and Power of Attorney and the Assignment forms and explaining what needed to be done in terms of signatures and addresses for each. I also mentioned that I had not yet heard from Mr. Sinyagin and that maybe Mr. Tokmulin could prod him again about calling me and talking with me about the possibility of his signing the two documents.

19. I did not hear from Mr. Sinyagin and I again contacted Mr. Tokmulin at IPEC

Precision. He stated that Mr. Sinyagin was reluctant to speak with me at all.

20. On August 15, 1997, Az Corporation sent to our office, by air courier, several copies of the Declaration and Power of Attorney and the Assignment in this patent application, each with the signatures of Mr. Balats and Mr. Shamshurin.

21. On August 18, 1997, our office received a "Notification of Missing Requirements Under 35 U.S.C. 371 in the United States Designated/Elected Office (DO/EO/US)" dated August 12, 1997, from the U.S. Patent and Trademark Office. Shortly thereafter I informed Mr. Tokmulin to inform the other inventors with residence in the U.S. that the due date for filing the signed Declaration and Power of Attorney had now been set for September 12, 1997, and that it was now important to collect all the necessary signatures for this document so that it could be timely submitted.

22. I called Mr. Tokmulin several times over the second half of August 1997. Mr. Tokmulin reiterated in these conversations that he would be able to obtain the signatures of Mr. Virovets, Mr. Bagriy, Mr. Antropov and himself, and that the question of whether Mr. Sinyagin would sign was still up in the air.

23. Mr. Tokmulin was away from his office for a week in late August 1997 (the work week of August 18-22). Upon his return I spoke with him again, and he requested that we fax to

him a copy of the patent application materials that were filed on July 11, 1997. On Thursday, August 28, 1997, I faxed him a copy of the English specification, the one claim and the Abstract that had been filed on that date.

24. In this telephone conversation Mr. Tokmulin also stated that it was his belief that Mr. Sinyagin definitely would not be signing the Declaration and Power of Attorney and the Assignment in this application.

25. By fax letter dated August 26, 1997, I informed Az Corporation that we would not be able to obtain the signature of Mr. Sinyagin and that Az Corporation should prepare and fax to us any and all materials that could be used to support their claim to ownership of this invention notwithstanding the absence of Mr. Sinyagin's signature on the Declaration and Power of Attorney.

26. On August 28, 1997, Az Corporation faxed to our office the materials that we are using herewith to establish Az Corporation's proprietary right to this invention under 37 CFR Ch. I, Section 1.47 (7-1-95 edition).

27. On Wednesday, September 3, 1997, I called Mr. Tokmulin to make sure that he had been able to obtain the four other inventors' signatures (including his own) and to make sure that he had mailed the Declaration and Power of Attorney, and the Assignment, with these four

signatures, to me. I was unable to reach him, and when he did not return my call I called Mr. Virovets, who stated that Mr. Tokmulin would try to reach me later in the day. When I asked Mr. Virovets if he might know anything about Mr. Sinyagin's refusal to sign the Declaration and Assignment, and might be able to bring any persuasive power to bear on Mr. Sinyagin, he stated that Mr. Tokmulin was really the only one of them who was in contact with Mr. Sinyagin and that he, Mr. Virovets, could therefore do nothing regarding Mr. Sinyagin's refusal.

28. When I reached Mr. Tokmulin on Thursday, September 4, 1997, he stated that he had only been able to obtain three signatures, his own, that of Mr. Virovets and that of Mr. Bagriy. He stated that Mr. Antropov had also refused to sign the two documents and had refused to reveal his whereabouts.

29. On that day, September 4, 1997, our office contacted Az Corporation by facsimile to inform them that our office would need Declarations and documentation from them to substantiate their proprietary claim to the invention not only in the absence of Mr. Sinyagin's signature but also in the absence of Mr. Antropov's signature. Our office proceeded to prepare documents attesting to our attempts to obtain signatures from these two inventors, the Petition proper and "guide documents" for Az Corporation and Iskona-II to help them gather the facts and the corresponding documentation in support thereof necessary for the U.S. Patent and Trademark Office to grant the Petition in this application.

30. According to information and belief, the assignee, Az Corporation, the assignee's legal representatives in the Russian Federation, Iskona-II, and the assignee's legal representatives in the United States, Lackenbach Siegel Marzullo Aronson & Greenspan, have made extensive and rigorous attempts to contact both Mr. Sinyagin and Mr. Antropov and have met with no success. The failure to obtain these two inventors' signatures on the Declaration and Power of Attorney and on the Assignment in the present application is in no way due to a lack of effort to obtain same.

31. The virtual assignee in the above application would be irreparably harmed if the accompanying Petition were not granted, as such refusal to grant would mean the complete loss of patent rights and patent protection in this invention in the United States and the subsequent inability to market and/or employ the invention in this country. As the obtaining of patent rights within the U.S. was one of the main reasons for filing the PCT application in the first place, if not the main reason, refusal to grant the present Petition would result in the complete invalidation of the efforts and funds used to in the filing and prosecution of the PCT application as well.

32. According to my information and belief, the accompanying Declarations by officials of Az Corporation and of Iskona-II clearly show that Az Corporation, the assignee in this application, has a clear and evident proprietary right to this invention, and that all seven inventors recognize that right. Refusal to grant the present Petition would interfere with Az Corporation's rights in the U.S. under 35 U.S.C. §351 *et seq.* and with the United States' obligations to honor

the Patent Cooperation Treaty and the rules and regulations promulgated thereunder.

33. I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of this patent application.

Dated: October 10, 1997

Adrienne Shirley
ADRIENNE SHIRLEY

/as

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: **TOKMULIN et al.**

Serial No.: **08/860,763**

Filing Date: **July 11,1997**

Group / Art Unit:

Examiner:

Title: **Device for Treating Planar Element with a Plasma Jet**

Docket No.: **P-9701 ISK**

Commissioner of Patents and Trademarks
Washington,D.C. 20231

Attn.: Office of Petitions

**SUPPLEMENTAL PAGES TO COMBINED DECLARATION
AND POWERS OF ATTORNEY BY PERSON
WITH SUFFICIENT PROPRIETARY INTEREST ON BEHALF
OF THE TWO OMITTED INVENTORS WHO HAVE REFUSED TO SIGN
OR CANNOT BE REACHED
(ACCORDING TO 37 CFR 1.47(b))**

SIR:

I, Vyacheslav A.Arkhangelsky, hereby declare that

1. I am a citizen of Russia, residing at 7-ya Parkovaya St., d.10, kv. 18, 105043, Moscow, Russia.

2. I am authorized to execute this Declaration by the following juristic entity with sufficient proprietary interest, Az Corporation (Zakrytoe Aktsionernoje Obshchestvo "Nauchno-proizvodstvennaya firma "Az"), located at 40 B.Semenovskaya St., 105023, Moscow, Russia, and am the Director General of this corporation.

Patent Application of TOKMULIN et al.

Serial No.: 08/860,763

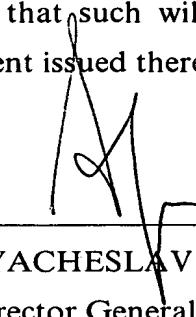
3. By virtue of this proprietary interest, I sign this declaration on behalf of, and as agent for Oleg Vyacheslavovich Sinyagin and Aleksandr Mikhailovich Antropov, who refuse to sign. To my information and belief, Mr. Sinyagin and Mr. Antropov are still Russian citizens. The last address for Mr. Sinyagin that is known to me is that listed in PCT Patent Application No. PCT/RU95/00063, 141120 Moscow region, Fryasino, Vokzalnaya St., 19-136, and the last address for Mr. Antropov that is known to me is that listed in PCT Patent Application No. PCT/RU95/00063, 140143 Moscow region, Ramenskoye, Krasnoarmeiskaya St., 26-35.

4. Upon information and belief, I aver those facts that the inventor is required to state. 37 CFR 1.64(b).

5. Accompanying this Declaration is a Declaration of Facts in Support of Filing on Behalf of Omitted Inventor, and a Declaration by Person Signing on Behalf of Omitted Inventor Establishing Proprietary Interest, to establish the proof of pertinent facts and to show that such action is necessary to preserve the rights of the parties or to prevent irreparable damage. Also enclosed is a check in the amount of one hundred thirty (\$130.00) dollars to cover the Petition fee under (37 CFR 1.17(h)).

6. I hereby state that all statements made herein are made of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Dated: September 30, 1997



VYACHESLAV A. ARKHANGELSKY
Director General, Az Corporation

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: TOKMULIN et al.

Serial No.: 08/860,763

Filing Date: July 11, 1997

Group / Art Unit:

Examiner:

Title: **Device for Treating Planar Element with a Plasma Jet**

Docket No.: P-9701 ISK

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Attn.: Office of Petitions

**DECLARATION ESTABLISHING PROPRIETARY INTEREST
BY PERSON SIGNING ON BEHALF OF OMITTED INVENTORS**

SIR:

1. I, Vyacheslav A. Arkhangelsky, residing at 7-ya Parkovaya St., d.10, kv. 18, 105043, Moscow, Russia, am the person signing the Declaration on the above identified application on behalf of the two omitted inventors, last known to be residing at: Oleg Vyacheslavovich Sinyagin - 141120 Moscow region, Fryasino, Vokzalnaya St., 19-136, and Alexandr Mikhailovich Antropov - 140143 Moscow region, Ramenskoye, Krasnoarmeiskaya St., 26-35 respectively, and make this Declaration as to the facts establishing the proprietary interest of Az Corporation (Zakrytoe Aktsionerное Общество "Научно-производственная фирма "Az"), located at 40 B.Semenovskaya St., 105023, Moscow, Russia.

Patent Application of TOKMULIN et al.

Serial No.: 08/860,763

2. As of the date of I signed the Declaration for this application, the proprietary interest in this invention belonged to the following juristic person: Az Corporation (Zakrytoe Aktsionerное Общество "Научно-производственная фирма "Az"), located at 40 B.Semenovskaya St., 105023, Moscow, Russia, and I am authorized to sign the Declaration on behalf of this juristic person, my title being that of Director General.

3. Although there is no Assignment and no written Agreement to assign, a sufficient proprietary interest is demonstrated by the attached legal memorandum establishing that a court of competent jurisdiction would, by the weight of authority in that Russian jurisdiction, the jurisdiction where all the inventors resided when the invention was made and when the underlying PCT application was filed, award title in this invention to Az Corporation, on behalf of which I have authority to sign.

4. In accordance with 37 CFR 3.73, Az Corporation hereby certifies that the evidentiary documents with respect to its ownership have been reviewed and that, to the best of Az Corporation's knowledge and belief, title is in the assignee seeking to take this action.

5. The U.S. Patent Office's refusal to grant the present Petition would cause irreparable damage, namely, loss of U.S. patent rights for Az Corporation.

a) Az Corporation has sold the exclusive license for production of Plasma Jet equipment for resist stripping to American company GaSonics International Corporation (2730 Junction Avenue, San Jose, California 95134, USA)

(see Exhibit A The first and last pages of Licence and Option Agreement)

Absence of U.S. Patent would cause loss of patent protection for this license in the United States, that would make production and sale of this equipment for GaSonics Corp. more difficult.

b) Omitted inventors are most likely engaged into the production of the similar devices. They may later wish to bring up an unfounded claim to the invention and AZ Corporation's device and development may be unprotected.

Patent Application of TOKMULIN et al.

Serial No.: 08/860,763

c) Failure to preserve the priority date of this application would not only violate the License and Option Agreement between Az Corporation and GaSonics International Corporation, but also make Az Corporation's device unprotected from copying and possibility of any new patent protection in the United States.

6. I hereby state that all statements made herein are made of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Dated: September 30, 1997



VYACHESLAV A. ARKHANGELSKY
Director General, Az Corporation

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: TOKMULIN et al.

Serial No.: 08/860,763

Filing Date: July 11,1997

Group / Art Unit:

Examiner:

Title: **Device for Treating Planar Element with a Plasma Jet**

Docket No.: P-9701 ISK

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Attn.: Office of Petitions

**DECLARATION OF FACTS IN SUPPORT OF FILING
ON BEHALF OF OMITTED INVENTORS (37 CFR 1.47)**

SIR:

1. This application is filed on July 11,1997 as Application Serial No. 08/860,763, and was described and claimed in International Application No. PCT/RU95/00063, filed on April 11,1995.

2. This Declaration is made to set forth the facts that are relied upon to establish the diligent effort made to secure the execution of the Declaration by the omitted inventors for the above-identified patent application, Oleg Vyacheslavovich Sinyagin and Alexandre Mikhailovich Antropov, before deposit thereof in the U.S. Patent and Trademark Office. Because signing on behalf of the omitted inventors is by a person or entity showing a sufficient proprietary interest, this Declaration also recites facts as to why this action was necessary to preserve the rights of the parties or to prevent irreparable damage. This Declaration is being made by the available person having first-hand knowledge of the facts recited herein.

Patent Application of TOKMULIN et al.

Serial No.: 08/860,763

3. My name is Vyacheslav A. Arkhangelsky, and I reside at 7-ya Parkovaya St., d.10, kv. 18, 105043, Moscow, Russia. I am the Director General of Az Corporation (Zakrytoe Aktsionernoe Obshchestvo "Nauchno-proizvodstvennaya firma "Az"), located at 40 B.Semenovskaya St., 105023, Moscow, Russia, the assignee in the above application.

4. The last address of Oleg Vyacheslavovich Sinyagin known to me is 141120 Moscow region, Fryasino, Vokzalnaya St., 19-136. The last address of Alexandr Mikhailovich Antropov known to me is 140143 Moscow region, Ramenskoye, Krasnoarmeiskaya St., 26-35.

5. According to my information and belief, Mr. Sinyagin was last in Russia in July 1994 and Mr. Antropov was last in Russia in April 1995. Later I heard from Mr. James M. LeMunyon, President of Novecon Technologies (12030 Sunrise Valley Drive, Suite 300 Reston, VA 22091-3425 USA) that Mr. Sinyagin had moved to the United States and was working there with IPEC Precision Inc. (3 Berkshire Boulevard, Bethel, Connecticut 06801 USA), and I heard from Mr. James M. LeMunyon that Mr. Antropov had also moved to the United States and was working there with IPEC Precision Inc.,

6. As Director General of Az Corporation I had efforts made to reach Mr. Sinyagin and Mr. Antropov while they were in the Russian Federation (see Exhibit B, a copy of a letter sent to Mr. Sinyagin by registered post). However, as it is very difficult, if not impossible, to carry on a successful search for someone in the United States from Moscow, I entrusted the search to Az Corporation's legal representatives in New York in this patent matter, Lackenbach Siegel Marzullo Aronson & Greenspan, P.C. The attached Declaration of Adrienne Shirley, a staff person at the aforementioned law firm, details their attempt to obtain the whereabouts and signatures of Mr. Sinyagin and Mr. Antropov on the Declaration and Power of Attorney and the Assignment for this application.

Patent Application of TOKMULIN et al.

Serial No.: 08/860,763

7. The U.S. Patent Office's refusal to grant the present Petition would cause irreparable damage, namely, loss of U.S. patent rights for Az Corporation.

a) Az Corporation has sold the exclusive license for production of Plasma Jet equipment for resist stripping to American company GaSonics International Corporation (2730 Junction Avenue, San Jose, California 95134, USA)

(see Exhibit A, the first and last pages of License and Option Agreement)

Absence of U.S. Patent would cause loss of patent protection for this license in the United States, that would make production and sale of this equipment for GaSonics Corp. more difficult.

b) Omitted inventors are most likely engaged into the production of the similar devices. They may later wish to bring up an unfounded claim to the invention and AZ Corporation's device and development may be unprotected.

c) Failure to preserve the priority date of this application would not only violate the License and Option Agreement between Az Corporation and GaSonics International Corporation, but also make Az Corporation's device unprotected from copying and possibility of any new patent protection in the United States.

8. I hereby state that all statements made herein are made of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Dated: September 30, 1997



VYACHESLAV A. ARKHANGELSKY
Director General, Az Corporation

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: TOKMULIN et al.

Serial No.: 08/860,763

Filing Date: July 11,1997

Group / Art Unit:

Examiner:

Title: **Device for Treating Planar Element with a Plasma Jet**

Docket No.: P-9701 ISK

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Attn.: Office of Petitions

**DECLARATION BY PERSON HAVING FIRST HAND KNOWLEDGE
THAT ALEKSANDR MIKHAILOVICH ANTROPOV WAS EMPLOYEE
OR OTHERWISE OBLIGATED TO PERSON
WITH SUFFICIENT PROPRIETARY INTEREST
WHEN INVENTION WAS MADE**

SIR:

1. I, Boris Mikhailovich Balats, residing at 111020 Moscow, Ukhtomskaya St., 13-43 make this Declaration in support of the Declaration Establishing Proprietary Interest by Person Signing on Behalf of Omitted Inventor in this application, a Declaration which I have read.

2. I have also read the above identified specification and claims.

3. I confirm that I have first hand knowledge that Alexandre Mikhailovich Antropov, last known to me as residing at 140143 Moscow region, Ramenskoye, Krasnoarmeiskaya St., 26-35, made the above identified invention while in the employ of the entity showing a proprietary interest which I now set forth.

Patent Application of TOKMULIN et al.

Serial No.: 08/860,763

4. I have been employed with Az Corporation since 26 September 1992 as a senior research worker in the Plasma Department and I was working together with Mr. Antropov (who was my colleague) until he left for the United States in April 1995.

5. From 01 April 1995 I became the Chief of the Plasma Department.

6. I have the personal knowledge of all documents attached to this Declaration, as they are comprising:

- documents on employment, dealing with employees of the Plasma Department supervised by me,
- working papers dealing with tasks of the Plasma Department

(See the following Exhibits:

Exhibit C Application on employment

Exhibit D Order on employment

Exhibit E Employment contract

Exhibit F Agreement regarding confidentiality of commercial and other secrets of the company

Exhibit G Order N 26 dated December 28, 1993

Exhibit H List of information and materials comprising commercial and other secrets of the company).

7. During his employment with Az Corporation Mr. Antropov was responsible for the following units which are the essential components of the Plasma generator system:

- ignition system
- magnet conductor with coils
- monitoring system
- software for ignition system and monitoring
- development of schematics and desk of manual control

Patent Application of TOKMULIN et al.

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(See the following Exhibits:

Exhibit I Agreement on works fulfilment

Exhibit J Written schedule).

8. This invention was made during development and production of the Plasma Jet prototype designed and assembled at Az Corporation's premises from components purchased by Az Corporation.

(See the following Exhibits:

Exhibit K Application on issuing the patent of the Russian Federation on invention

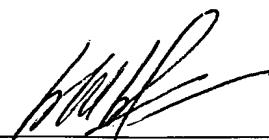
Exhibit L Power of attorney

Exhibits M-R Copies of invoices and specifications to the contracts on components purchase).

9. Non-standard components and units as well as reagents and wafers were produced either by Az Corporation or purchased following Az Corporation's orders and at its expense.

10. I hereby state that all statements made herein are made of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Dated: September, 30, 1997



BORIS M. BALATS

Chief of the Plasma Dept., Az Corporation

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: TOKMULIN et al.

Serial No.: 08/860,763

Filing Date: July 11,1997

Group / Art Unit:

Examiner:

Title: **Device for Treating Planar Element with a Plasma Jet**

Docket No.: P-9701 ISK

Commissioner of Patents and Trademarks
Washington,D.C. 20231

Attn.: Office of Petitions

**DECLARATION BY PERSON HAVING FIRST HAND KNOWLEDGE
THAT OLEG VYACHESLAVOVICH SINYAGIN WAS EMPLOYEE
OR OTHERWISE OBLIGATED TO PERSON
WITH SUFFICIENT PROPRIETARY INTEREST
WHEN INVENTION WAS MADE**

SIR:

1. I, Boris Mikhailovich Balats, residing at 111020 Moscow, Ukhtomskaya St., 13-43 make this Declaration in support of the Declaration Establishing Proprietary Interest by Person Signing on Behalf of Omitted Inventor in this application, a Declaration which I have read.

2. I have also read the above identified specification and claims.

3. I confirm that I have first hand knowledge that Oleg Vyacheslavovich Sinyagin, last known to me as residing at 141120 Moscow region, Fryasino, Vokzalnaya St., 19-136, made the above identified invention while in the employ of the entity showing a proprietary interest which I now set forth.

Patent Application of TOKMULIN et al.

Serial No.: 08/860,763

4. I have been employed with Az Corporation since 26 September 1992 as a senior research worker in the Plasma Department and I was working together with Mr. Sinyagin (who was the supervisor of the Plasma Department) until he left for the United States in July 1994.

5. From 01 April 1995 I became the Chief of the Plasma Department.

6. I have the personal knowledge of all documents attached to this Declaration, as they are comprising:

- documents on employment, dealing with employees of the Plasma Department supervised by me,
- working papers dealing with tasks of the Plasma Department

(See the following Exhibits:

Exhibit S Application on employment

Exhibit T Order on employment

Exhibit U Employment contract

Exhibit V Agreement regarding confidentiality of commercial and other secrets of the company

Exhibit G Order N 26 dated December 28,1993

Exhibit H List of information and materials comprising commercial and other secrets of the company).

7. During his employment with Az Corporatin Mr. Sinyagin was responsible for the following activities:

- coordination of development and production of equipment
- electrode assemblies conctruction
- general managing of design and technological matters.

(See the following Exhibits:

Exhibit W Agreement on works fulfilment

Exhibit J Written schedule).

Patent Application of TOKMULIN et al.

Serial No.: 08/860,763

8. This invention was made during development and production of the Plasma Jet prototype designed and assembled at Az Corporation's premises from components purchased by Az Corporation.

(See the following Exhibits:

Exhibit K Application on issuing the patent of the Russian Federation on invention

Exhibit L Power of attorney

Exhibits M-R Copies of invoices and specifications to the contracts on components purchase).

9. Non-standard components and units as well as reagents and wafers were produced either by Az Corporation or purchased following Az Corporation's orders and at its expense.

10. I hereby state that all statements made herein are made of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Dated: September, 30, 1997



BORIS M. BALATS

Chief of Plasma Dept., Az Corporation

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: TOKMULIN et al.

Serial No.: 08/860,763

Filing Date: July 11, 1997

Group / Art Unit:

Examiner:

Title: Device for Treating Planar Element with a
Plasma Jet

Docket No.: P-9701 ISK

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Attn: Office of Petitions

DECLARATION OF LAW

SIR:

1. I, Elena A. Gavrilova, residing at 4, kv.168, Berezhkovskaya nab., 121059 Moscow, Russia, declare that I am duly recognized to practice law in the Russian Federation, and more particularly in the region of Moscow, and am familiar with the law of this jurisdiction.

2. With respect to the proprietary interest asserted in this invention by Az Corporation (Zakrytoe Aktsionerno Obshchestvo «Nauchno-proizvodstvennaya firm “Az”»), located at 40 B. Semenovskaya St., 105023, Moscow, Russia, I have studied the Declarations filed in this application with respect to the facts by the following individuals: Vyacheslav A. Arkhangelsky, Boris M. Balats and Adrienne Shirley.

Patent Application of TOKMULIN et al.
Serial No.: 08/860,763

3. By the weight of authority in the Russian Federation, title of this invention would be awarded to Az Corporation (Zakrytoe Aktsionernoe Obshchestvo «Nauchno-proizvodstvennaya firm “Az”»). I have reached this conclusion according to the Patent Law of the Russian Federation Part III, Clause 8, Item 2, first paragraph. (A copy of the relevant Patent Law of the Russian Federation in this matter is enclosed.)

4. Please be informed that the International application No. PCT/RU95/ 00063 for the invention “Device for Treating Planar Element with a Plasma Jet” was filed with the Russian Patent Office as the WIPO authorized office on April 11, 1995 in the name of the company “Az” (Zakrytoe Aktsionernoe Obshchestvo «Nauchno-proizvodstvennaya firm “Az”»).

5. The said International application enjoys Convention priority of January 13, 1995 based on the Russian application No. 95100180 on which the Russian patent No. 2075135 is available in the name of the company “Az”. (A copy of the Russian patent No. 2075135 is enclosed.)

6. I hereby state that all statements made herein are made of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Dated: 30.09.1997

/as



ELENA A. GAVRILOVA

Patent Law of the Russian Federation

Signed by the President
of the Russian Federation
on September 23, 1992

No 3517-1.

Entered into force
from the date of promulgation
on October 14, 1992

Part III Authors and patent holders

Clause 8. Patent holders

1. ...

2. The right for obtaining the patent on invention, utility model, prototype, invented by an employee while carrying out official duties or under the specific task of the employer, belongs to the employer, provided nothing else is stipulated by the agreement between the parties.

Патентный закон Российской Федерации

Подписан Президентом
Российской Федерации
23 сентября 1992 г.
№ 3517 - 1.
Введен в действие
с даты опубликования
14 октября 1992 г.

РАЗДЕЛ III

АВТОРЫ И ПАТЕНТООБЛАДАТЕЛИ

Статья 7. Автор изобретения, полезной модели, промышленного образца

1. Автором изобретения, полезной модели, промышленного образца признается физическое лицо, творческим трудом которого они созданы.

2. Если в создании объекта промышленной собственности участвовало несколько физических лиц, все они считаются его авторами. Порядок пользования правами, принадлежащими авторам, определяется соглашением между ними.

Не признаются авторами физические лица, не внесшие личного творческого вклада в создание объекта промышленной собственности, оказавшие автору (авторам) только техническую, организационную или материальную помощь либо только способствовавшие оформлению прав на него и его использованию.

3. Право авторства является неотчуждаемым личным правом и охраняется бессрочно.

Статья 8. Патентообладатель

1. Патент выдается:

автору (авторам) изобретения, полезной модели, промышленного образца;

физическими и (или) юридическими лицами (при условии их согласия), которые указаны автором (авторами) или его (их) правопреемником в заявке на выдачу патента либо в заявлении, поданном в Патентное ведомство до момента регистрации изобретения, полезной модели, промышленного образца;

работодателю в случаях, предусмотренных пунктом 2 настоящей статьи.

2. Право на получение патента на изобретение, полезную мо-

дель, промышленный образец, созданные работником в связи с выполнением им своих служебных обязанностей или полученного от работодателя конкретного задания, принадлежит работодателю, если договором между ними не предусмотрено иное.

При этом автор имеет право на вознаграждение, соразмерное выгода, которая получена работодателем или могла бы быть им получена при надлежащем использовании объекта промышленной собственности, в случаях получения работодателем патента, передачи работодателем права на получение патента другому лицу, принятия работодателем решения о сохранении соответствующего объекта в тайне или неполучения патента по поданной работодателем заявке по причинам, зависящим от работодателя. Вознаграждение выплачивается в размере и на условиях, определяемых на основе соглашения между ними.

Если работодатель в течение четырех месяцев с даты уведомления его автором о созданном изобретении, полезной модели или промышленном образце не подаст заявку в Патентное ведомство, не переуступит право на подачу заявки другому лицу и не сообщит автору о сохранении соответствующего объекта в тайне, то автор имеет право подать заявку и получить патент на свое имя. В этом случае работодатель имеет право на использование соответствующего объекта промышленной собственности в собственном производстве с выплатой патентообладателю компенсации, определяемой на договорной основе.

В случае недостижения соглашения между сторонами о размере и порядке выплаты вознаграждения или компенсации спор рассматривается в судебном порядке. За несвоевременную выплату вознаграждения или компенсации, определенных договором, работодатель, виновный в этом, несет ответственность в соответствии с гражданским законодательством Российской Федерации.

Иные отношения, возникающие в связи с созданием работником изобретения, полезной модели, промышленного образца, регулируются законодательством Российской Федерации о служебных изобретениях, полезных моделях и промышленных образцах.

§ 1.47 Filing when an inventor refuses to sign or cannot be reached.

(a) If a joint inventor refuses to join in an application for patent or cannot be found or reached after diligent effort, the application may be made by the other inventor on behalf of himself or herself and the omitted inventor.

The oath or declaration in such an application must be accompanied by a petition including proof of the pertinent facts and by the required fee (§1.17(h)) and must state the last known address of the omitted inventor. The Patent and Trademark Office shall forward notice of the filing of the application to the omitted inventor at said address. Should such notice be returned to the Office undelivered, or should the address of the omitted inventor be unknown, notice of the filing of the application shall be published in the *Official Gazette*. The omitted inventor may subsequently join in the application on filing an oath or declaration of the character required by §1.63. A patent may be granted to the inventor making the application, upon a showing satisfactory to the Commissioner, subject to the same rights which the omitted inventor would have had if he or she had been joined.

(b) Whenever an inventor refuses to execute an application for patent, or cannot be found or reached after diligent effort, a person to whom the inventor has assigned or agreed in writing to assign the invention or who otherwise shows sufficient proprietary interest in the matter justifying such action may make application for patent on behalf of and as agent for the inventor. The oath or declaration in such an application must be accompanied by a petition including proof of the pertinent facts and a showing that such action is necessary to preserve the rights of the parties or to prevent irreparable damage, and by the required fee (§1.17(h)) and must state the last known address of the inventor. The assignment, written agreement to assign or other evidence of proprietary interest, or a verified copy thereof, must be filed in the Patent and Trademark Office. The Office shall forward notice of the filing of the application to the inventor at the address stated in the application. Should such notice be returned to the Office undelivered, or should the address of the inventor be unknown, notice of the filing of the application shall be published in the *Official Gazette*. The inventor may subsequently join in the application on filing an oath or declaration of the character required by §1.63. A patent may

be granted to the inventor upon a showing satisfactory to the Commissioner.



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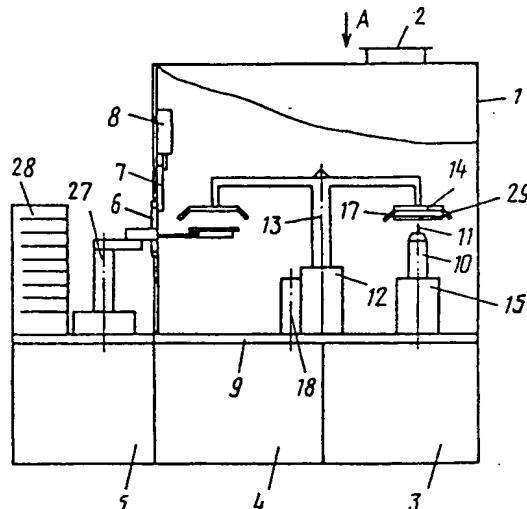
Комитет Российской Федерации
по патентам и товарным знакам

(12) ОПИСАНИЕ ИЗОБРЕТЕНИЯ
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(72) Токмулин И.М., Багрий И.П., Балац
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рин В.Г., Антропов А.М.
(71) (73) Акционерное общество Научно-
производственная фирма "АЗ"
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(54) УСТАНОВКА ДЛЯ ПЛАЗМОСТРУЙ-
НОЙ ОБРАБОТКИ ПЛАСТИН
(57) Использование: в технологии плазмен-
ной обработки плоских изделий, например
пластин, в электронной и электротехниче-
ской промышленности. Сущность изобрете-
ния:

2
ния: установка для плазмоструйной обработ-
ки пластин включает установленные в
замкнутой камере 1 привод 12 углового
перемещения держателей 14, снабженных
общим приводом 18 их вращения, генератор
10 плазменной струи и установленные вне
замкнутой камеры 1 манипулятор 27 и
накопители 28 пластин 29. Обрабатываемая
пластин 29 берется манипулятором 27 из
накопителя 28 и устанавливается в держа-
тель 14, который, перемещаясь вместе с
пластиной 29, проходит над генератором 10
плазменной струи, которая обрабатывает
пластину. Цикл может повторяться много-
кратно. 5 ил.

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Изобретение относится к области плазменной технологии и может быть использовано в электронной и электротехнической промышленности при обработке плоских изделий, например полупроводниковых пластин, подложек печатных плат, компакт-дисков и других изделий.

Известна установка для исследования взаимодействия плазмы с поверхностью, включающая генератор плазмы, источник его питания, систему перемещения генератора плазмы, систему перемещения образцов, систему газораспределения и систему управления (1).

Данная установка имеет следующие недостатки.

Отсутствие системы быстродействующей загрузки-выгрузки обрабатываемых образцов приводит к большим затратам времени, а значит и энергии генератора плазмы, расходуемой впустую при смене обрабатываемых пластин-образцов.

Отсутствие возможности одновременно-последовательной обработки сразу нескольких пластин-образцов снижает производительность. Наличие в установке множества контрольно-измерительных средств, которые не позволяют эффективно производить многократно повторяющуюся обработку образцов по жестко заданному циклу, однозначно определяют данную установку как чисто исследовательскую.

Все вышесказанное приводит к тому, что она не может быть применена в условиях серийного производства.

Известна также установка для плазмоструйной обработки пластин, содержащая генератор плазменной струи, систему подачи газа, группу держателей обрабатываемых пластин, конструктивно выполненных в виде карусели с приводом углового перемещения и обращенных к плазменной струе генератора, направленной вниз, а каждый держатель выполнен в виде горизонтальной площадки с возможностью вращения вокруг оси, перпендикулярной к ее плоскости и проходящей через ее центр, причем плазменная струя и держатель имеют возможность перемещения относительно друг друга в направлении по крайней мере одной координатной оси могут быть в или вне контакта друг с другом (2).

Данная установка, как наиболее близкая по технической сущности к заявляемой, принята за прототип.

Недостатками данной установки являются невысокая производительность, ограниченная большим объемом ручных операций при

загрузке-выгрузке обрабатываемых пластин, и ухудшение качества обработанных пластин за счет возможных повреждений их поверхности при контактном способе крепления на держателе.

К недостаткам следует отнести и то, что направление плазменной струи сверху вниз вызывает необходимость принятия мер по обеспечению охлаждения генератора плазменной струи от перегрева идущими вверх горячими газами, образующими в процессе работы генератора плазмы.

Указанные недостатки устранены в установке для плазмоструйной обработки пластин, содержащей генератор плазменной струи, систему подачи газа, группу держателей обрабатываемых пластин с приводом углового перемещения, обращенных к плазменной струе генератора, а каждый держатель обрабатываемых пластин выполнен в виде горизонтальной площадки с возможностью вращения вокруг оси, проходящей через ее геометрический центр и перпендикулярной ее плоскости, причем плазменная струя и держатель обрабатываемых пластин имеют возможность перемещения относительно друг друга в направлении по крайней мере одной координатной оси и могут быть в или вне контакта друг с другом, в которую введены манипулятор, накопители обрабатываемых пластин и замкнутая камера с системой газообмена, внутри которой смонтированы держатели обрабатываемых пластин и генератор плазменной струи, направленной снизу вверх по отношению к плоскости расположения горизонтальных площадок держателей обрабатываемых пластин, при этом замкнутая камера выполнена с окном, на котором смонтирована подвижная шторка, манипулятор размещена с возможностью взаимодействия с накопителями непосредственно, а с держателями обрабатываемых пластин - через окно камеры, при этом каждый держатель обрабатываемых пластин снабжен ограничителями по краям, а в его горизонтальной площадке выполнено по крайней мере три вихревых камеры и три тангенциальные канала, причем оси вихревых камер перпендикулярны плоскости горизонтальной площадки, а каждая из вихревых камер выполнена с открытой частью, расположенной на горизонтальной торцевой поверхности держателя обрабатываемых пластин, связана через тангенциальный канал с системой подачи газа и размещена таким образом, что образованные вихревые потоки обеспечивают удержание пластины около держателя и охлаждение ее отдельных областей для

выравнивания по поверхности пластины количества энергии, используемой для ее обработки, а ограничители на площадках держателя пластин выполнены в виде стержней, установленных под углом $\alpha > 90^\circ$ к плоскости горизонтальной площадки держателя обрабатываемых пластин и их длина l выбирается из условия

$$2l\sin(\alpha-90^\circ) > \Delta, \text{ где}$$

Δ - максимальное отклонение от осесимметричного расположения обрабатываемых пластин в накопителях.

Технический результат использования предложенной установки обеспечивается следующим:

- введение манипулятора с накопителями обрабатываемых пластин также позволяет повысить производительность обработки за счет уменьшения времени загрузки-выгрузки обрабатываемых пластин;

- применение держателя пластин, имеющего по крайней мере три вихревые камеры и три тангенциальных канала с осями вихревых камер, перпендикулярными горизонтальной площадке держателя, где каждая вихревая камера связана через тангенциальный канал с системой подачи газа, позволяет достичь устойчивого удержания обрабатываемой пластины вблизи держателя с газовым зазором без касания пластины и держателя, что в свою очередь позволяет улучшить качество обработанных пластин за счет отсутствия следов касания (царапин).

Расположение каждой из вихревых камер на держателе таким образом, что образованные ими вихревые потоки обеспечивают в каждой точке поверхности обрабатываемой пластины выполнение условия $Q_0=Q_1+Q_2$, где $Q_0=\text{const}$ - количество энергии, идущее на нагрев пластины в данной точке;

Q_1 - количество энергии, получаемое данной точкой поверхности пластины с учетом ее термической прозрачности;

Q_2 - количество энергии, поступающее за счет реакции взаимодействия с материалом поверхности пластины в данной точке, позволяет получить более равномерную, а значит более качественную обработку пластины.

Это обусловлено тем, что каждая вихревая камера, создавая газовый вихрь, обеспечивает не только условия удержания пластины около держателя, но и охлаждение отдельных областей обрабатываемой пластины. Поскольку в процессе обработки разные точки поверхности обрабатываемой пластины находятся в разных тепловых условиях, то, исходя из баланса энергии, вихревые потоки

позволяют создать условия для выравнивания Q_0 во всех точках пластины.

Использование ограничителей на держателях в виде стержней, установленных под углом $\alpha > 90^\circ$ к горизонтальной площадке держателя, длина l которых выбирается из условия

$$2l\sin(\alpha-90^\circ) > \Delta, \text{ где}$$

Δ - максимальное отклонение от осесимметричного расположения пластин в накопителе, позволяет обеспечить необходимую точность при загрузке-выгрузке пластин без применения дополнительных средств центрования.

На фиг. 1 показан общий вид установки для плазмоструйной обработки пластин; на фиг. 2 - вид А на фиг. 1; на фиг. 3 - кинематическая схема исполнительного механизма общего привода вращения держателей; на фиг. 4 - держатель пластин; на фиг. 5 - сечение А-А на фиг. 4.

Установка содержит замкнутую камеру 1, систему 2 газообмена, систему 3 электропитания, систему 4 подачи газа, систему 5 управления. Замкнутая камера 1 выполнена с окном 6, в котором установлена подвижная шторка 7 с приводом 8. Внутри замкнутой камеры на основании 9 размещены генератор 10 плазменной струи 11, привод 12 углового перемещения, вертикальный вал 13 которого связан с держателями 14. Генератор 10 плазменной струи 11 обращен в сторону держателей 14 и установлен на основании 9 на регулируемой по высоте опоре 15 так, что ось плазменной струи 11 и собственные оси каждого держателя 14 равноудалены от оси вертикального вала 13 привода углового перемещения 12. А держатели 14 выполнены в виде горизонтальных площадок 16 с ограничителями 17. Ограничители 17 выполнены в виде стержней, например, цилиндрических. Горизонтальные площадки 16 получают вращение вокруг своих осей от привода 18, например посредством исполнительного механизма 19 путем последовательного взаимодействия его зубчатых колес 20, 21, 22 и шкивов 23 и 24. На горизонтальных площадках 16 выполнены вихревые камеры 25, каждая из которых выполнена с открытой частью, расположенной на горизонтальной торцевой поверхности держателя 14 и связана с тангенциальным каналом 26, соединенным с системой 4 подачи газа. Вне замкнутой камеры 1 на основании 9 установлены манипулятор 27 и накопители 28 пластин 29.

Работает установка следующим образом.

В исходном состоянии один из накопителей 28 с пластинами 29, а другой - без.

Манипулятор 27 осуществляют захват нижней пластины 29 в накопителе 28 и ее перемещение через окно 6 (открыв приводом 8 шторку 7) внутрь замкнутой камеры 1.

В этот момент первый из держателей 14 находится в положении загрузки. Манипулятором 27 подают пластину 29 в положение под горизонтальную площадку 16 первого держателя 14.

Включением системы 4 подачи газа в вихревых камерах 26 держателя 14 создают вихри 30, обеспечивающие удержание пластины 29 на расстоянии 0,5-1,0 мм от торцевой горизонтальной поверхности площадки 16 держателя 14. В этот момент манипулятор 27 отпускает пластину 29. Пластина загружена.

Осуществляют загрузку следующей пластины.

В предложенном примере установка для плазмоструйной обработки пластин выполнена с пятью держателями пластин, расположенными под углом 72° в горизонтальной плоскости друг относительно друга. Подачу следующего держателя в зону загрузки осуществляют посредством привода 12 углового перемещения держателя 14.

ФОРМУЛА ИЗОБРЕТЕНИЯ

Установка для плазмоструйной обработки пластин, содержащая генератор плазменной струи, систему подачи газа, группу держателей обрабатываемых пластин с приводом углового перемещения, обращенных к плазменной струе генератора, а каждый держатель выполнен в виде горизонтальной площадки с возможностью вращения вокруг оси, проходящей через ее геометрический центр и перпендикулярной ее плоскости, причем плазменная струя и держатель обрабатываемых пластин имеют возможность перемещения относительно друг друга в направлении по крайней мере одной координатной оси и могут быть в или вне контакта друг с другом, отличающаяся тем, что в нее введены манипулятор, накопители обрабатываемых пластин и замкнутая камера с системой газообмена, внутри которой смонтированы держатели обрабатываемых пластин и генератор плазменной струи, направленной снизу вверх по отношению к плоскости расположения горизонтальных площадок держателей обрабатываемых пластин, при этом замкнутая камера выполнена с окном, на котором смонтирована подвижная шторка, манипуля-

После загрузки всех держателей манипулятор 27 выводят из замкнутой камеры 1 и приводом 8 закрывают шторку 7. Подают в камеру необходимый газ.

Генератор 10 плазменной струи 11 при помощи опоры 15 устанавливают относительно поверхности обрабатываемой пластины 29 на высоту, соответствующую технологическому процессу.

Включением привода 18 начинают вращать держатели 14 вместе с пластинами 29 вокруг их осей, задавая динамику движения пластины 29 от системы 5 управления. Включают генератор 10 плазменной струи 11, привод 12 углового перемещения держателей и проводят обработку.

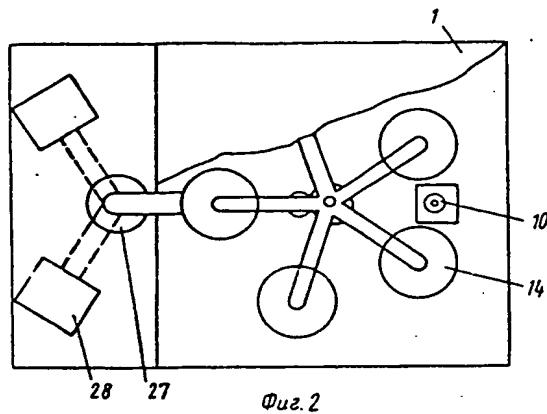
После заданного количества взаимодействий пластины 29 с плазменной струей 11 генератора 10 привод 12 по заданной программе от системы 5 управления останавливают так, чтобы ни одна из пластин 29 на держателях 14 не попала в зону воздействия плазменной струи генератора.

Отключают вращение привода 18 и генератор 10 плазменной струи.

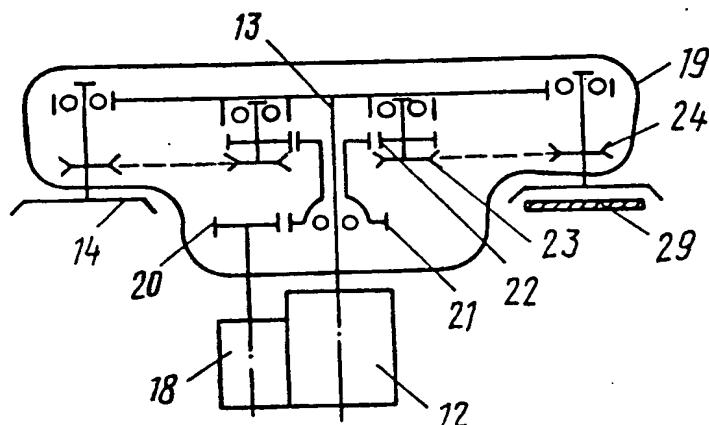
Далее повторяют цикл со следующей партией пластин.

тор размещен с возможностью взаимодействия с накопителями непосредственно, а с держателями обрабатываемых пластин - через окно камеры, при этом каждый держатель обрабатываемых пластин снабжен ограничителями по краям, а в его горизонтальной площадке выполнены по крайней мере три вихревые камеры и три тангенциальных канала, причем оси вихревых камер перпендикулярны плоскости горизонтальной площадки, а каждая из вихревых камер выполнена с открытой частью, расположенной на горизонтальной торцевой поверхности держателя обрабатываемых пластин, связана через тангенциальный канал с системой подачи газа и размещена так, что образованные вихревые потоки обеспечивают удержание пластины около держателя и охлаждение ее отдельных областей для выравнивания по поверхности пластины количества энергии, используемой для ее обработки, а ограничители на площадках держателя пластин выполнены в виде стержней, установленных под углом $\alpha > 90^\circ$ к плоскости горизонтальной площадки держателя обрабатываемых пластин и их длина l выбирается из условия $2l \sin(\alpha - 90^\circ) > \Delta$, где

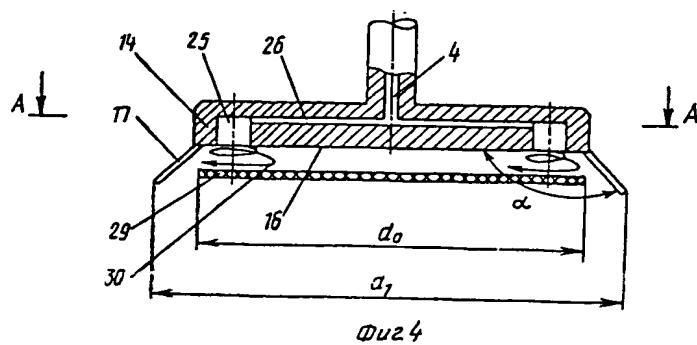
Δ - максимальное отклонение от осесимметричного расположения обрабатываемых пластин в накопителях.



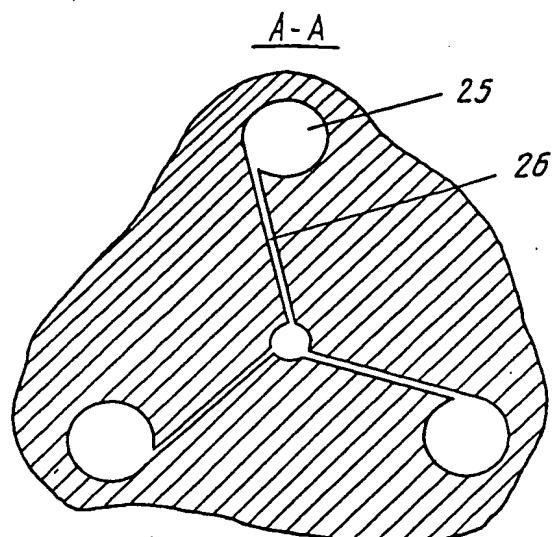
Фиг.2



Фиг.3



Фиг.4



Фиг.5

Заказ *Ин* Подписьное
ВНИИПИ, Рег. ЛР № 040720
113834, ГСП, Москва, Раушская наб., 4/5

121873, Москва, Бережковская наб., 24 стр. 2.
Производственное предприятие «Патент»

LICENSE AND OPTION AGREEMENT

THIS LICENSE AND OPTION AGREEMENT (hereinafter "Agreement") is made by and between Az Research and Development Joint Stock Company, (hereinafter "LICENSOR") having a place of business at 40, Bol'shaya Semyonovskaya Street, 105023, Moscow, Russia, and GaSonics International Corporation (hereinafter "LICENSEE") having a place of business at 2730 Junction Avenue, San Jose, California 95134, USA and is effective as of October 2, 1995 (hereinafter the "Effective Date").

WHEREAS, LICENSOR owns know-how related to the design, development, use and manufacture of plasma jet photo resist stripping devices and processes, and owns related patents and has filed related patent applications, and desires to transfer this know-how to LICENSEE to commercialize the know-how; and

WHEREAS, LICENSEE is desirous of obtaining an exclusive license pursuant to the terms, conditions and limitations hereinafter set forth for the manufacture, use and sale of products that employ the Licensed Patents or Licensed Know-How (as hereinafter defined);

NOW, THEREFORE, in consideration of the premises and of the mutual covenants hereinafter recited and other good and valuable consideration, it is agreed as follows:

ARTICLE I - Definitions

Section 1.1 Licensed Patents - The term "Licensed Patents" shall mean (i) the patents and patent applications listed on Schedule A, additional counterpart applications filed in the future in the Territory (as hereinafter defined) whether by LICENSOR or LICENSEE; (ii) all patents issuing from the patent applications defined in (i) above; (iii) all divisions, continuations, continuations-in-part, reissues, reexaminations or extensions of the patents or patent applications defined in (i) and (ii) above; and (iv) Improvement Patents (as hereinafter defined).

Section 1.2 Licensed Know-How - The term "Licensed Know-How" shall mean the technical and operational information, technology, data, and prototypes related to the Licensed Products (as hereinafter defined) to the extent disclosed, directly or indirectly, to LICENSEE by LICENSOR.

Section 1.3 Licensed Products - The term "Licensed Products" shall mean plasma jet photo resist stripping devices manufactured, used, sold, leased or otherwise disposed of by LICENSEE including, without limitation, improvements to or of such products, whether patentable or unpatentable, made by either LICENSOR or LICENSEE during the Term (as hereinafter defined) which employ in the country of manufacture or disposition one or more of the issued Licensed Patents of that country, or the Licensed Know-How, or both.

Section 1.4 Territory - The term "Territory" shall mean all countries of the world except:

- the Russian Federation and the other 14 nation states that comprised the territory of the former Soviet Union; and

- Poland, Hungary, Czech Republic, Slovakia, Romania, and Bulgaria.

Section 1.5 Improvement Patent - The term "Improvement Patent" shall mean any patent covering a modification of a Licensed Product described in a Licensed Patent, provided such modified Licensed Product, if not licensed, would infringe one or more claims of an issued Licensed Patent.

Section 1.6 Net Sales Value - The term "Net Sales Value" shall mean the gross invoice price charged thereof including charges for related maintenance and engineering services less all allowances for returns and less (to the extent separately stated on such invoice) cash and other customary trade discounts granted thereon, charges for packing and shipping and sales and excise taxes included in such invoice price.

ARTICLE II - Grant

Section 2.1 Grant of License - Subject to the provisions of this Agreement, LICENSOR agrees to grant and hereby does grant to LICENSEE throughout the Term, (with the right to sublicense on the terms and conditions set forth herein and with the approval of LICENSOR), an exclusive license to make, have made for its own account, use, sell and otherwise dispose of Licensed Products. The license granted under this Section 2.1 to LICENSEE shall extend within the Territory and be exclusively for sale of Licensed Products directly or indirectly by the LICENSEE. The LICENSOR shall retain, however, the right to make use at its own discretion of all the rights resulting from its patents, patent applications and know-how in all countries of the Territory for purposes separate and distinct from the making, using or selling Licensed Products.

Section 2.2 Rights to LICENSEE'S Developments - Subject to the provisions of this Agreement, including the confidentiality provisions of Section 3.6, LICENSEE hereby grants to LICENSOR the exclusive right to use outside the Territory any and all technical and operational information, technology, and data developed by LICENSEE related to improvements and modifications to the Licensed Products.

Section 2.3 Improvements - LICENSEE and LICENSOR shall promptly inform each other about any improvements made to the Licensed Products. The receiving party shall not incur any expense for receiving such information, except to reimburse the other party for pre-approved expenses related to preparing and delivering information about any improvements.

ARTICLE III - Exchange of Know-How

Section 3.1 Initial Exchange - Not later than forty-five (45) days after the Effective Date of the Agreement, LICENSOR shall provide in the English language to LICENSEE the Licensed Patents and all Licensed Know-How that exists in written form as of the Effective Date, consisting of written reports, test data, written product information, engineering drawings in either computer or hard copy form, facility requirements, installation requirements, operating system software, calculations, and information of a similar nature related to the making, using or selling of Licensed Products.

Not later than four (4) months after the Effective Date, LICENSOR shall provide to LICENSEE, FOB Moscow, one prototype plasma jet photo resist stripping device which shall include all of the minimum requirements found at Attachment B. Additional Licensed Know-How may be provided to LICENSEE at other times in oral or written form, including while providing Consulting Services (as hereinafter defined).

Section 3.2 Technology Transfer Assistance - At the request of LICENSEE with at least 14 days advance notice, and not later than two months after the date of shipment of the prototype device according to Section 3.1, LICENSOR shall provide the technical and engineering services of at least three qualified technical experts or engineers who are familiar with the Licensed Patents and Licensed Know-How for a period of no more than 90 days at LICENSEE's place of business in San Jose, California. The technical and engineering services provided according to this paragraph shall be provided at no expense to LICENSEE, except that LICENSEE agrees to pay for the expenses of the technical experts and engineers according to Section 3.6. In the event that LICENSEE does not make a request for technical and engineering services within two months after shipment of the prototype device according to this paragraph, the LICENSEE shall be deemed to have forfeited its right to such services according to this paragraph, and LICENSOR shall be under no obligation to provide such services according to this paragraph. However, LICENSEE may request and receive Consulting Services (as hereinafter defined) according to Section 3.3.

Section 3.3 Consulting Services - At any time after the Effective Date of this Agreement, LICENSEE may request, and if requested LICENSOR agrees to provide, technical and engineering services related to the design, use, and manufacture of Licensed Products (hereinafter "Consulting Services.") When a request is transmitted by LICENSEE to LICENSOR, LICENSOR shall within one business day (excluding recognized Russian holidays): (i) reply with the information requested by LICENSEE or (ii) acknowledge receipt of LICENSEE's request with an estimate of when and in what form the reply will be made. LICENSOR shall record the hours and/or days worked in performing Consulting Services, and shall submit an invoice monthly, which LICENSEE agrees to pay on a net 15 day basis. LICENSEE shall pay LICENSOR according to the following:

per week per person, when Consulting Services are provided for more than three days during a working week (Monday through Friday); or

per day per person, when Consulting Services are provided for more than seven hours per day and up to three days per working week (Monday through Friday); or

per hour per person, when Consulting Services are provided for fewer than seven hours in one business day.

If Consulting Services are performed in the Territory, they will be performed for a minimum of one week, and billed in weekly increments.

Section 3.4 Independent Contractors - The Consulting Services will be provided by the LICENSOR's employees or representatives as independent contractors, and neither the LICENSOR nor LICENSOR's employees or representatives will act as an agent of LICENSEE. LICENSOR and LICENSOR's employees shall not enter into any agreements, or incur any obligations, on behalf of LICENSEE without LICENSEE's prior written consent.

Section 3.5 Not Employees - Neither the LICENSOR nor any employee or representative of LICENSOR involved in providing such Consulting Services shall be deemed an employee of LICENSEE for the purposes of any employee benefit programs, or for the purpose of withholding income taxes or any other taxes for any municipality, state, national or other governmental entity.

Section 3.6 Travel Expenses - In addition to the payment for Consulting Services, when LICENSEE requests that Consulting Services be performed in the Territory, or requests technical and engineering services according to section 3.2 in the Territory, LICENSEE shall be responsible for payment for reasonable business-class travel expenses, medical insurance, and language interpretation and translation that are pre-approved by LICENSOR, and _____ per diem per person for each day that a person provided by LICENSOR to perform Consulting Services at the request of LICENSEE is in the United States, or the prevailing U.S. Government per diem rate outside the United States. The per diem payment shall be considered to cover all living expenses, meals, and incidental expenses, including telephone. When requesting Consulting Services in the Territory, LICENSEE shall provide LICENSOR with a minimum 14 days advance written notice, and LICENSEE shall make its best effort to assist in obtaining necessary entry visas.

Section 3.7 Confidential Information - In providing Licensed Know-How and in delivering the Consulting Services, it is anticipated that LICENSEE and LICENSOR will exchange certain confidential and proprietary business, technical, and engineering information, drawings and data, which includes but is not limited to Licensed Know-How (hereinafter "Information").

LICENSEE and LICENSOR agree to retain the other party's Information in confidence both during the Term and subsequent to the termination or expiration of this Agreement subject, however, to the condition that no such obligation shall apply or continue to apply, as the case may be, as to any portion of such Information known by the other party based upon written evidence without any obligation of confidentiality or non-use prior to first receipt of same; is known or through no act or failure to act on the part of the receiving party becomes generally known to the public; is hereafter properly furnished to receiving party by a third party without restriction on disclosure or use; is disclosed pursuant to a court order or judicially binding order of any other governmental authority; or is developed independently by an employee of the receiving party who is not privy to the Information. The obligation to maintain the Information in confidence shall expire thirty-six (36) months after termination or expiration of this Agreement.

ARTICLE IV - Compensation

Section 4.1 Up Front Fee - LICENSEE shall pay LICENSOR a non-refundable, non-renewable, and non-creditable fee of _____ on or before the Effective Date of this Agreement. LICENSEE shall pay LICENSOR an additional non-refundable, non-renewable, and non-creditable fee of _____

thousand dollars) no later than five days after delivery of one prototype plasma jet photo resist stripping device according to Section 3.1 of this Agreement to San Francisco International Airport, cleared by U.S. Customs, and delivered to a freight forwarder or customs broker if such delivery is designated by LICENSEE.

Section 4.2 Royalties - Royalties shall be paid by LICENSEE to LICENSOR for each Licensed Product sold, leased or otherwise disposed of by LICENSEE beginning on the Effective Date according to the following schedule:

- (a) per Licensed Product when the Net Sales Price is less than
- (b) per Licensed Product when the Net Sales Price is greater than or equal to

Section 4.3 Sales; Returns - A Licensed Product shall be considered as sold and royalties shall accrue when such Licensed Product is billed out, or if not billed out, when delivered, shipped or mailed to LICENSEE's customer. If LICENSEE grants a customer a credit or refund for returned or damaged Licensed Products, LICENSEE shall be entitled to a credit against royalties accruing thereafter under this Agreement equal to the royalty paid by LICENSEE on that part of the sales price so credited or refunded. Upon termination of this Agreement, LICENSEE shall have the right to sell off its existing inventory of Licensed Products for a one (1) year period following such termination.

Section 4.4 Late Payment Penalty - If payments pursuant to Sections 3.3, 4.1, and 4.2 of this Agreement are not paid in time, LICENSEE shall pay to LICENSOR a penalty in the amount of five per cent of the payment not made properly pursuant to this Agreement for each month of such delay.

Section 4.5 Change in Royalty Payments After Eight Years - Beginning eight years after the first royalty payment is paid by LICENSEE to LICENSOR according to Section 4.2 of this Agreement, all royalty payments made according to this Agreement shall be paid at fifty percent (50%) of the amount stated in Section 4.2.

ARTICLE V - Reports and Payments

Section 5.1 Statement. - Within sixty (60) days after the end of each quarter year ending with the last day of March, June, September and December of each calendar year during the Term, LICENSEE shall furnish LICENSOR with written statements reflecting total unit sales of all Licensed Products sold during the preceding calendar quarter and total direct research and development expenditures calculated according to generally accepted accounting procedures (including labor and materials but not including overhead or general and administrative expenses) and shall pay the royalties due pursuant to Article IV. A similar statement shall be rendered and payment made within sixty (60) days after the date of termination of this Agreement covering the period from the end of that covered by the last preceding report to the date of termination. The

first statement submitted under this Agreement shall cover the period from the Effective Date of this Agreement to the end of the quarter being reported.

All royalties and other payments to be made pursuant to this Agreement herein shall be payable by LICENSEE in United States dollars to LICENSOR at the address specified in Section 7.12 hereof.

Section 5.2 Accounts - LICENSEE shall keep for three (3) years after the date of submission of each statement, true and accurate records and books of accounts containing all the data reasonably required for the full computation and verification of LICENSEE's Net Sales Value, deductions taken and royalties to be paid as well as the other information to be given in the statements herein provided for, and dates of purchase orders secured for Licensed Products. LICENSEE shall permit a Certified Public Accountant to inspect such records and books of accounts at LICENSEE's premises during normal business hours provided reasonable prior notice is given to LICENSEE and all expenses associated with such inspection are borne by LICENSOR.

Article VI - Term and Termination

Section 6.1 - Term - This Agreement shall commence as of the Effective Date and continue in force until twenty (20) years after the Effective Date unless sooner terminated by LICENSOR or LICENSEE as hereinafter provided.

Section 6.2 Termination for Default - If LICENSOR or LICENSEE shall at any time default in the payment of any payments due in accordance with this Agreement or in fulfillment of any of the other obligations or conditions hereof, the non-defaulting party shall give notice of such default specifying the reasons therefor. If such default is not cured within thirty (30) days of such notice, the non-defaulting party shall then have the right in its discretion to terminate this Agreement by giving written notice of termination. This Agreement shall terminate on the thirtieth day after such notice is given.

Section 6.3 Termination on Insolvency - In the event that LICENSEE shall cease conducting business in the normal course, become insolvent, make a general assignment for the benefit of creditors, suffer or permit the appointment of a receiver for its business or assets, then this Agreement may be terminated effective on the date of such event or at any time thereafter by LICENSOR by notice electing to terminate this Agreement, where permitted by law.

Section 6.4 Termination by LICENSEE - LICENSEE shall have the absolute right to terminate this Agreement at any time after the Effective Date hereof upon six months written notice to LICENSOR. Such termination by LICENSEE shall not relieve LICENSEE from any obligations accrued prior to the date of termination. Moreover, LICENSEE agrees to refrain from any and all manufacture, use or sale of any products that constitute Licensed Products under this Agreement after the date of termination. LICENSOR may begin negotiations related to the Licensed Patents, Licensed Know-How, or Licensed Products with a prospective licensee immediately upon receipt of written notice of termination from LICENSEE. In the event

LICENSEE terminates this Agreement, LICENSEE shall, with the consent of the LICENSOR, terminate all sub-licenses, such termination being effective as of the effective date of termination of this Agreement.

Section 6.5 Effect of Termination - No termination of this Agreement shall restrict LICENSOR in any way after termination from obtaining damages for any breach of this Agreement nor shall it relieve LICENSEE from fulfilling any of its obligations hereunder which expressly or impliedly survive termination.

Section 6.6 Waiver of Default - No failure or delay on the part of LICENSOR or LICENSEE in exercising its right of termination hereunder for any one or more defaults shall be construed to prejudice its right of termination for such or for any other or subsequent default.

Section 6.7 Termination by LICENSOR - LICENSOR shall have the absolute right to terminate this Agreement beginning 42 months after the Effective Date with six months advance written notice to LICENSEE, but only if LICENSEE has not secured purchase orders for at least 10 Licensed Products during any six month period beginning 36 months after the Effective Date as verified according to Section 5.2. If, prior to 36 months after the Effective Date, LICENSEE notifies LICENSOR in writing that LICENSEE is having substantial difficulty in bringing a Licensed Product to market based upon testing of prototypes of the Licensed Product, the 36 month and 42 month periods defined in this paragraph shall be extended on a calendar quarter-by-quarter basis, provided that new prototype test data with all deficiencies noted is provided to LICENSOR not less frequently than on a quarterly basis showing that LICENSEE is making its best efforts to produce a competitive Licensed Product.

Article VII - Additional Provisions

Section 7.1 Offensive Litigation - If either LICENSOR or LICENSEE knows or has reason to believe that any Licensed Patent having one or more claims covering Licensed Products is being infringed either directly or contributorily or otherwise by a third party, the party possessing such knowledge or belief shall promptly notify the other party thereof. LICENSEE at its own discretion and judgment may take prompt action to terminate such infringement and, therefore, LICENSEE shall be empowered by LICENSOR to proceed as follows:

(a) To bring suit in its own name or, if required by law, jointly with LICENSOR, at LICENSEE's sole expense, and to conduct litigation in a manner designed to terminate infringement of any such Licensed Patent including, without limitation, the initiation of suit in the United States Federal District Courts or before the International Trade Commission. It is understood and agreed that all expenses associated with any such legal suits or proceedings, including, without limitation, attorneys' fees and other expenses incurred by LICENSOR in relation to all aspects of such suits, including defenses to any counterclaims and cross-claims that may be asserted by third party defendants shall be borne by LICENSEE;

- (b) To enjoin or seek damages in suits for such infringement and to collect monies for use of the inventions covered by the asserted Licensed Patents, including monies in the form of damages, punitive damages, lost profits, and attorneys' fees;
- (c) To settle any claim or suit for infringement of such Licensed Patents by granting the infringing party a sublicense under the provisions of Section 2.1 of this Agreement.

In case a settlement is reached, after deducting LICENSEE's reasonable attorneys' fees incurred related to reaching such settlement, the proceeds shall be shared two-thirds (2/3) for LICENSEE and one-third (1/3) for LICENSOR.

Section 7.2 Defensive Litigation - If notice is received by either party to this Agreement charging that the making, using or selling of any Licensed Product under the terms of this Agreement constitutes infringement of intellectual property rights held by a third party, the party receiving such notice will promptly notify the other party to this Agreement. LICENSEE and LICENSOR agree to enter into discussions, and when necessary to work out, if possible, a mutually acceptable change in the construction of the Licensed Products to avoid such alleged infringement. If no such mutually satisfactory change can be worked out, LICENSEE and LICENSOR agree to collaborate for the purpose of LICENSEE entering into discussions with said third party for the purpose of negotiating a settlement. LICENSEE shall have the right to settle any such charge of infringement by granting a cross-license or sub-license of one or more of the Licensed Patents with the consent of the LICENSOR. In the event that no settlement can be reached without a trial in a court, LICENSEE shall have the right to choose trial counsel and make final the determination as to trial tactics and strategy.

The reasonable and necessary expenses of outside counsel associated with the defense of third party infringement charges of the kind described in this section, shall be solely the responsibility of the LICENSEE. Notwithstanding any other provision of this Agreement, LICENSEE shall have the right to withhold from the LICENSOR up to three-fourths (3/4) of the royalties otherwise due to LICENSOR in any calendar quarter to pay for up to three-fourths (3/4) of the expenses of outside counsel incurred by LICENSEE in that calendar quarter associated with the defense of such third party infringement charges.

Section 7.3 Patent and Know-How Validity - In the event of any challenge in any judicial or administrative forum relating to the validity or enforceability of any Licensed Patent or Licensed Know-How, any obligation specified in this Agreement to pay royalties to the LICENSOR shall continue unless and until the challenged patent has been finally determined, without possibility of appeal, by duly constituted judicial or administrative authority in the country in question, to be invalid and/or unenforceable. Failure to continue to make such royalty payments to the LICENSOR before the rendering of any such final determination shall constitute grounds for termination of the license under Section 6.2 herein. All royalty payments made to the LICENSOR prior to the issuance of any such final determination shall not be refundable and any such final determination shall not affect LICENSEE's obligations to pay royalties otherwise due under this Agreement. Notwithstanding any other provision of this Agreement, LICENSEE shall have the right to withhold from the LICENSOR up to three-fourths (3/4) of the royalties

otherwise due to LICENSOR in any calendar quarter to pay for up to three-fourths (3/4) of expenses of outside counsel incurred by LICENSOR in that calendar quarter associated with a challenge in any judicial or administrative forum of the kind described in this section.

Section 7.4 Assignment - This Agreement may not be assigned by LICENSEE without LICENSOR's consent. This Agreement shall be binding on the LICENSOR, LICENSEE, their successors, or assigns.

Section 7.5 Construction - This Agreement will be governed by and construed in accordance with the laws of the State of California. The headings of Articles and Sections in this Agreement are intended solely for convenience of reference and shall not be considered in construing this Agreement.

Section 7.6 Extraneous Writings - This Agreement constitutes the entire understanding between the parties with respect to the subject matter hereof; all prior agreements, drafts, representations, negotiations and undertakings are superseded as of the Effective Date. No amendment to this Agreement shall be effective unless it is in writing and signed by duly authorized representatives of both parties.

Section 7.7 Patent Marking - LICENSEE agrees to place, and cause its Affiliates to place, in a conspicuous location on each Licensed Product sold in the United States, a patent notice in the form authorized by Section 287 of Title 35 of the United States Code setting forth the patent number of each United States Letters Patent licensed under this Agreement, and agrees further to similarly place a patent notice on each Licensed Product sold by LICENSEE or its Affiliates in the other countries within the Territory in the manner and form as is customary and lawful in such other country.

Section 7.8 Negation of Agency and Similar Relationships - Nothing herein contained shall be deemed to create an agency, joint venture or partnership relation between the parties hereto.

Section 7.9 Severability - The non-enforceability of any clause or paragraph in this Agreement shall not affect the enforceability of the remaining portions of this Agreement unless said clause or paragraph is an essential, material portion of the Agreement, in which case the parties agree to negotiate in good faith with respect to modification of said clause or paragraph.

Section 7.10 Insurance - Before marketing or selling any Licensed Product, LICENSEE shall provide LICENSOR with a certificate afforded by its product liability insurance policy in terms of primary per occurrence limits and excess amounts of coverage.

Section 7.11 Sublicenses - Subject to LICENSEE's right to grant sublicenses pursuant to Section 2.1, LICENSEE may grant sublicenses only with the prior approval of LICENSOR.

Section 7.12 Notice - All notices, payments or statements given under this Agreement shall be in writing (all payments should be made by check or bank wire transfer payable to Novecon Technologies, L.P.) and shall be deemed to have been properly given when delivered personally

or sent by prepaid registered or certified mail, or, if appropriate, by telex or electronic transmission to the following addresses:

If given to LICENSOR:

Novecon Technologies, L.P.
12030 Sunrise Valley Drive, Suite 300
Reston, VA 22091 USA
Attention: Mr. James M. LeMunyon
(for transfer to Az Research and Development Joint Stock Company)

If given to LICENSEE:

GaSonics International Corporation
2730 Junction Avenue
San Jose, CA 95134 USA
Attention: Mr. Lou Perrone

The date of service shall be deemed to be the date on which such notice, payment or statement was personally delivered, posted or sent by telex or electronic transmission. Either party may give written notice of a change of address, and after notice of such change has been received, any notice, payment or statement thereafter shall be given to such party as above provided at such changed address. The Novecon address in this section does not apply to purely technical discussions between LICENSEE and LICENSOR.

Section 7.13 Entire Agreement - This Agreement constitutes the entire agreement among the parties with respect to the matters discussed herein; it supersedes any prior agreement or understandings among them, oral or written, all of which are hereby canceled. There are no representations, agreements, arrangements or understandings, oral or written, between or among the parties relating only to the subject matter of this Agreement which are not fully expressed herein.

Section 7.14 Incorporation by Reference - All exhibits referenced to herein form an integral part of the Agreement and are incorporated into this Agreement by such reference.

Section 7.15 No Warranties - LICENSOR makes no warranty or representation, expressed or implied, regarding the performance of Licensed Products, and LICENSEE will indemnify and hold LICENSOR harmless with respect to any and all claims, losses, damages, liabilities, and legal and other expenses related to the manufacturing, marketing, sale, or use of Licensed Products.

Section 7.16 Government Obligations - All duties, taxes and other government obligations incurred in the Territory associated with the signing and performance of this Agreement shall be borne by the LICENSEE, and all duties, taxes, and other government obligations incurred outside the Territory associated with the signing and performance of this Agreement shall be borne by the LICENSOR.

Section 7.17 Patent Filing Restrictions - LICENSEE acknowledges and shall continue to acknowledge during the Term of this Agreement the validity of the LICENSOR's ownership rights to the Licensed Patents and the Licensed Know-How, unless an appropriate judicial proceeding or national patent office determines that some or all of the ownership rights are not valid. After the Effective Date, LICENSOR will not file or cause to be filed any applications for patents related to the Licensed Know-How in any country, including Russia or other countries outside the Territory, either directly or utilizing the Patent Cooperation Treaty, without advance written notification of LICENSEE at least three (3) months prior to the filing of such an application.

In the event LICENSEE is desirous to patent the Licensed Products in countries where these have not been patented by the LICENSOR, LICENSEE shall patent them with the consent and in the name of LICENSOR. In the event that a patent application is made in the Territory, all expenses incurred in making such an application and in securing a patent shall be borne by the LICENSEE.

Section 7.18 Arbitration - All disputes and controversies arising from this Agreement or in connection with it shall be settled by the International Arbitration Association (IAA) in Stockholm (Sweden). The decision thereof shall be final and binding on the parties hereof.

Section 7.19 Notification of Enquiries - LICENSEE shall promptly notify LICENSOR of all inquiries or requests for information about Licensed Products received by LICENSEE from entities outside the Territory, and LICENSOR shall promptly notify LICENSEE of all inquiries or requests for information about Licensed Products received by LICENSOR from entities in the Territory. LICENSEE, at LICENSOR's request, shall acquaint LICENSOR's potential clients (outside the Territory) with the Licensed Products.

ARTICLE VIII - Option on Related Use

Section 8.1 Limitations on License - Subject to the provisions of this Article VIII, LICENSOR hereby grants to LICENSEE an exclusive license limited to utilizing the Licensed Patents and Licensed Know-how solely to evaluate and test the same for possible incorporation into plasma jet inorganic silicon wafer cleaning devices during the period beginning on the Effective Date and ending on September 30, 1996. No rights are granted to manufacture, use, or sell products, except Licensed Products as defined in Section 1.3.

Section 8.2 Additional Compensation - In addition to the compensation due according to Article IV, and as consideration for the exclusive license granted pursuant to Section 8.1, LICENSEE agrees to pay LICENSOR a non-refundable and non-creditable fee of

on each of the following dates: December 31, 1995, March 31, 1996, June 30, 1996, and September 30, 1996, unless LICENSEE has provided written notice to LICENSOR that LICENSEE is exercising the option provided for in Section 8.3, or notifies LICENSOR in writing that LICENSOR has elected not to exercise said option. In the event that LICENSOR elects not to exercise said option, the license granted according the Section 8.1 of this Agreement shall terminate as of the date LICENSEE'S notification to LICENSOR.

Section 8.3 Grant and Exercise of Option - Provided LICENSEE has fulfilled the obligations of Sections 8.1 and 8.2, LICENSOR agrees that until September 30, 1996, LICENSEE shall have an exclusive option (hereinafter "Option") to acquire by license the rights to use the Licensed Patents and Licensed Know-how for the purpose of manufacturing, using or selling plasma jet inorganic silicon wafer cleaning devices. LICENSEE shall exercise this Option by giving LICENSOR written notice. If such written notice is received by LICENSEE after December 31, 1995, it shall be considered valid only if LICENSEE has made all payments to LICENSOR according to the provisions of both Articles IV and VIII of this Agreement.

Section 3.4 Execution of License Agreement; Payment - Should LICENSEE exercise its Option, LICENSEE and LICENSOR agree that they will immediately execute the additional License Agreement which is attached hereto as Exhibit 1, and LICENSEE will pay to LICENSOR the sum of **as provided for in Section 4.1** of said attached License Agreement.

IN WITNESS WHEREOF, the parties have caused this License Agreement to be duly executed in their names by their proper officers thereunto duly authorized.

Gasonics International Corporation

Az Research and Development JSC

By:

cs International Corpor
Joe Celine

By:

Printed:

Mr. Lou Perone

Printed

Dr. Vyacheslav A. Arhangelsky

Title:

Vice President

Title:

Director General

Date:

9/22/8

Date:

Date: 9/12/95 Date: 9/12/95

SCHEDULE A

1. Russian Fed. Patent No. 5063203/25: Installation for Plasma-Stream Treatment of Plates, granted on March 30, 1994.
2. Russian Fed. Patent No. 5063678/25: Method of and Device for Creation of Plasma Flow, granted on January 11, 1995.

SCHEDULE B

The Prototype System to be delivered to GaSonics International Corporation shall contain the following minimum requirements:

1. Plasma Generator System:

- plasma generator;
- magnet system;
- ignition unit;
- plasma ignition controller;
- magnet system controller.

2. Plasma Monitoring System:

- photo sensors.

3. Carousel Unit:

- 5-site carousel for 10 cm wafers with a holder for demonstration capability for 20 cm wafers;
- centering loader for automatic loading of 10 cm wafers;
- positioner "carousel - plasma generator";
- controller.

4. Control unit:

- processor;
- software.

141120, Moscow region
Fryasino
Vokzalnaya St., 19 - 136

To: Mr. Sinyagin O.V.

Dear Mr. Sinyagin,

Administration of AZ Corp. for the second time ask you to visit the firm until 10 Oktober 1994 in order to explain reasons for your long-time absence, to settle the matter of your employment and residing in the company's flat.

Director General

V.A. Arkhangelsky

The letter was sent by registered post on 04 October 1994

EXHIBIT B - Registered post letter, O.V.Sinyagin

85-00/С-16/211
04.10.94.

В

141120, Московская обл.,
г. Фрязино, ул. Вокзальная,
д. 19, кв. 136
гос. Синягину О. В.

УВАЖАЕМЫЙ ГОС. СИНЯГИН!

Администрация АО НПФ "АЗ" вторично просит Вас в срок до 10.10.94 г. явиться на фирму для объяснения причин Вашей длительной независимости на работу с целью решения вопроса о трудовых отношениях и пользовании предоставленным жилым помещением.

Генеральный директор

В.А. Архангельский

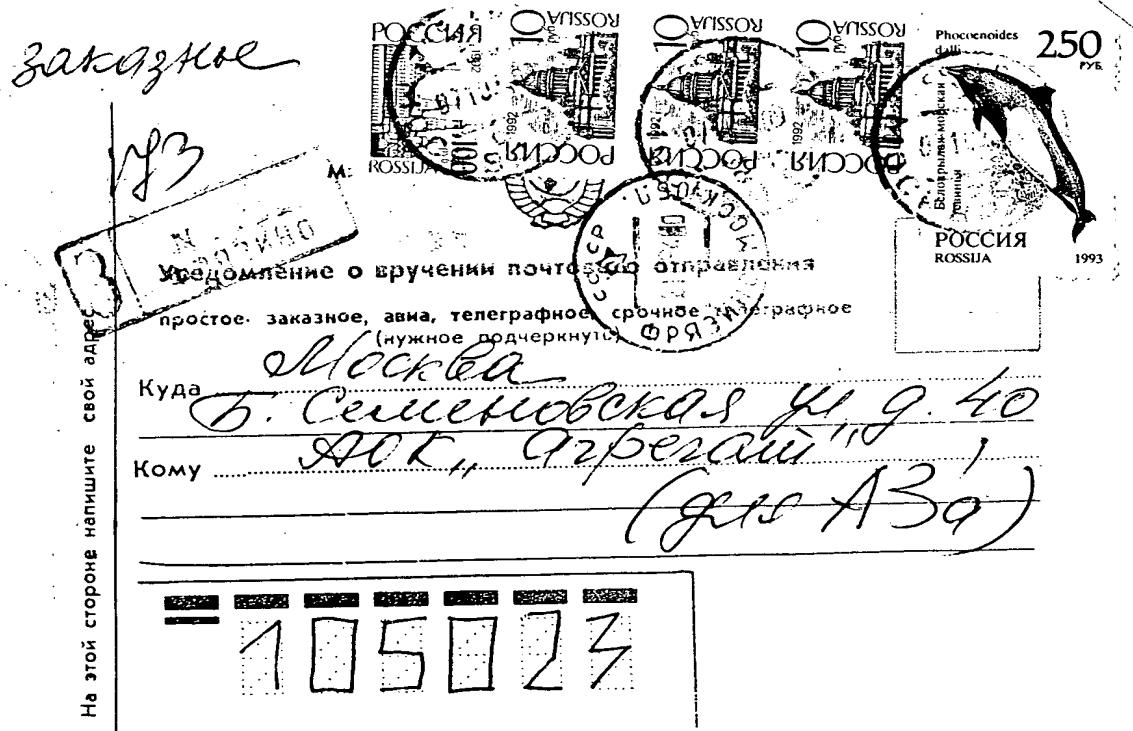


EXHIBIT B – Registered letter by post to O. V.
Sinyagin, in original Russian

To: Chairman of Research and Production cooperative "Az"
Lavrentyev N.A.

From: Antropov A.M.

APPLICATION

I ask you to employ me with RPC "Az" as a full-time employee from 01 June 1991.

(signed) Antropov A.M.

ФОРМЫ № 1

ЯМИ РАБОТЫ

19

001

898

19

91

19

19

ДАЖДЬ ПО
МНИМУМУ И Д

СТЬ И ПОДИСЬ
ПРОЩЕГО ПОСТРУ

200-1

EXHIBIT C – Application for Employment of
A. M. Antropov, in original Russian

17060

Зах. 8944

ORDER ON EMPLOYMENT N 49

issued on 03 June 1991 by Research and Production cooperative "Az"

stating that Antropov Alexandre Mikhailovich,
date of birth 15 May 1958

is employed from 03 June May 1991
on the full-time basis
as senior research worker

Signature of head (signed) N.A.Lavrentyev

Signature of employee (signed) A.M.Antropov

03 June 1991

EXHIBIT D - Order on Employment, A.M.Antropov

Ч.П. № 3
предприятие, организация

ПРИКАЗ (РАСПОРЯЖЕНИЕ) № 49
о приеме на работу

03.06.1991 г.

Антропов 4505582

Александрович Отчество Михайлович

Начислить на работу с 03.06.1991 г.

Характер работы постоянно, временно, сезонно

« » 1991 г.

Место работы основная, основная, по совместительству

спытательным сроком или без него ЧП № 3 срок испытания

цех (отдел) ЧП № 3

должность

Категория персонала рабочий, ИТР, служащий и т. д.

Бельный номер

Профессия ст. научный сотрудник

Квалификация

Квалификация

Форма и система оплаты труда

Условия труда нормальные, тяжелые и вредные, особо тяжелые и т. д.

Категория служащего руководитель, специалист, технический исполнитель

Надбавка к заработной плате:

Д размер

Д размер

Д размер

Продолжительность рабочего дня (рабочей недели) при

работе с неполным рабочим временем

Источник комплектования

Подпись руководителя

Подпись работника

Личная карточка №

дата

от « 01.06.82 »

Ч/№ 01.06.82

Кодовая информация в приказу (распоряжению) о приеме на работу (форма № Т-1 (АСУ))

Код списка (фасета)

Номер личной карточки	Предприятие, организация	Номер приказа (распоряжения)

Фамилия для перфорации на обороте

Номер строки	Код списка (фасета)	Код
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		

Код

Размер надбавки

Код корректировки

Закодировал

EXHIBIT D – Order for Employment for A. M. Antropov, in original Russian

EMPLOYMENT CONTRACT

1. GENERAL CONDITIONS

AZ Corporation, hereinafter referred to as the ENTERPRISE, in the person of Director General Vyacheslav A. Arkhangelsky, on the one side, and

Alexandr Mikhailovich Antropov

hereinafter referred to as the EMPLOYEE, have concluded the present Contract whereby it is agreed as follows:

1.1 The EMPLOYEE Alexandr Mikhailovich Antropov is employed as a senior research worker

1.2 Work on this Contract is the basic place of work.

1.3 Term of Contract:

Date of beginning of employment 21 January 1994

Date of end of employment 20 January 1995

1.4 Period of probation

(duration of the period of probation)

2. RESPONSIBILITIES OF THE EMPLOYEE

2.1 During the term of Contract the EMPLOYEE is obligated:

- to follow during his employment the demands of the legislation of Russian Federation and other Acts, covering the activity of the ENTERPRISE and employees;
- to fulfil in a qualitative way and in due time all orders of the immediate superior;
- to follow demands and terms of the Contract;
- to follow demands of the internal regulations of the ENTERPRISE;
- to use the property of the ENTERPRISE carefully, to provide the property to be used effectively;
- to save in the course of work resources, energy, to economize materials, electric power and components;
- to introduce new techniques and technology, to up-date the produced product and to increase its quality;
- to follow safety regulations and fire-prevention measures, to make his subordinates to follow these regulations;
- not to disclose information treated by the ENTERPRISE as confidential, as listed in the printed order N 26 dated 28 December 1993.

2.2 The additional obligations of the EMPLOYEE:

3. OBLIGATION OF THE ENTERPRISE

3.1 During the term of the Contract the ENTERPRISE is obligated:

- to follow in its relations with the EMPLOYEE the Labour legislation of the Russian Federation and the terms of this Contract;
- to arrange the work of the EMPLOYEE, to provide conditions for the safe effective work;
- to equip the working place in accordance with safety regulations and accident prevention measures;
- to assist the EMPLOYEE to increase his qualification at the ENTERPRISE's expense (qualification improvement training, college study and special subjects study);
- to inform the EMPLOYEE about circumstances which may influence fulfilment of the Contract.

3.2 Obligation of the ENTERPRISE on provision of working conditions, indicating real characteristics, compensations and privileges to the EMPLOYEE for the hard, extra hard work and dangerous, extra dangerous working conditions:

3.3 Additional obligations of the ENTERPRISE:

4. WORKING HOURS AND HOLIDAYS

4.1 The EMPLOYEE has irregular working hours.

4.2 The EMPLOYEE has the annual holiday during
basic 24 working days;
(as for the 6-days working week)
additional 6 working days.

5. SALARY

5.1 The EMPLOYEE has:

salary 250,000 roubles per month;
bonus and other payments in accordance with the Salary Regulations

5.2 The ENTERPRISE is obligated to revise the amount of salary in accordance with the inflation rate.

6. TERMINATION OF THE CONTRACT, CONCLUSION OF THE NEW CONTRACT, ALTERATION OF TERMS OF THE CONTRACT

6.1 The enterprise is obligated to inform the EMPLOYEE not less than one month before the termination of the Contract about prolongation of employment contract and conclusion of the new contract, alteration of the terms of the contract or termination of the working relations.

6.2 The EMPLOYEE is obligated not less than two weeks before the termination of the contract to conclude the new contract with the ENTERPRISE or to inform administration about his discharge after the termination of the contract.

6.3 The Contract is written in two copies, both being equally valid.

6.4 Within the period of validity, the terms of the Contract can be changed upon mutual agreement between the ENTERPRISE and the EMPLOYEE.

7. CONSIDERATION OF DISPUTES

7.1 Disputes of the parties are considered in accordance with the acting legislation of the Russian Federation.

7.2 In case of discrepancy between the terms of the Contact and the Labour legislation of the Russian Federation, which provides the EMPLOYEE with more privileges and social guarantees, the Labour legislation shall be followed.

8. OTHER TERMS OF THE CONTRACT DEALING WITH SPECIFIC FEATURES OF WORK

ENTERPRISE

Arkhangelsky V.A.

Address: 105023, Moscow
B.Semenovskaya St.,40

SIGNED: V.A.Arkhangelsky
SEALED: Az Corporate Seal

EMPLOYEE

Antropov A.M.

Passport XXVI-MIO № 653759
issued by UVD Zelenograd
on 07 May 1980

Address: Moscow region, Ramenskoye,
Krasnoarmeiskaya St.,26 - 35

SIGNED: A.M.Antropov

14
E

ТРУДОВОЙ КОНТРАКТ № 92

1. ОБЩИЕ ПОЛОЖЕНИЯ.

АО Научно-производственная фирма "АЗ", именуемая в дальнейшем "ПРЕДПРИЯТИЕ", в лице Генерального директора Архангельского В.А., с
ной стороны и гражданин

Андропов Александр Михайлович
(Ф.И.О.)

именуемый в дальнейшем "РАБОТНИК" заключили настоящий договор о ни-
 следующем :

1.1. РАБОТНИК Андропов Александр Михайлович
(Ф.И.О.)

нимается на работу в качестве

старшего научного сотрудника

1.2. Работа по настоящему договору является основным местом ра-
бы.

1.3. Срок действия контракта:

Начало работы 21. сентября 1994 г.

Завершение работы 20 октября 1995 г.

1.4. Срок испытания

(продолжительность испытательного срока)

2. ОБЯЗАННОСТИ РАБОТНИКА.

2.1. РАБОТНИК в течение срока действия контракта обязан :

- в процессе трудовой деятельности выполнять требования Законо-
ельства РФ и иных нормативных актов, действие которых распро-
стягивается на ПРЕДПРИЯТИЕ и деятельность должностных лиц ;
- качественно и в срок выполнять задания непосредственного ру-
одителя ;
- выполнять требования и условия контракта ;
- подчиняться требованиям внутреннего трудового распорядка

EXHIBIT E - Employment Contract of A. M.
Antropov, in original Russian

ПРЕДПРИЯТИЯ ;

- бережно относиться к собственности ПРЕДПРИЯТИЯ, способствовать ее эффективному использованию ;
- в процессе трудовой деятельности осуществлять ресурсо- и энергосбережение, всемерно способствовать экономии материалов, электроэнергии и комплектующих ;
- содействовать внедрению новой техники и технологии, обновлению выпускаемой продукции и повышению ее качества ;
- соблюдать правила по охране труда и противопожарной безопасности, следить за соблюдением этих правил подчиненными ;
- не разглашать сведения, представляющие коммерческую и иную тайну ПРЕДПРИЯТИЯ, перечень которых определен Приказом N 26 от 12.93г.

2.2. Дополнительные обязанности РАБОТНИКА : _____

3. ОБЯЗАННОСТИ ПРЕДПРИЯТИЯ.

3.1. ПРЕДПРИЯТИЕ в период срока действия контракта обязано :

- руководствоваться в трудовых отношениях с РАБОТНИКОМ Трудовым законодательством РФ и условиями настоящего контракта ;
- организовать труд РАБОТНИКА, создать условия для безопасного эффективного труда ;
- оборудовать рабочее место в соответствии с правилами охраны труда и техники безопасности ;
- содействовать повышению РАБОТНИКОМ своей квалификации за счет средств ПРЕДПРИЯТИЯ (курсы повышения квалификации, учебные заведения и целевые курсы по изучению специальных дисциплин) ;
- сообщать РАБОТНИКУ об обстоятельствах, влияющих на ход выполнения контракта.

3.2. Обязанности ПРЕДПРИЯТИЯ по обеспечению условий работы на рабочем месте с указанием достоверных характеристик, компенсаций и премий РАБОТНИКУ за тяжелые, особо тяжелые работы и работы с вредными-оносительно вредными или опасными условиями труда :

3.3. Дополнительные обязанности ПРЕДПРИЯТИЯ:

4. РАБОЧЕЕ ВРЕМЯ И ВРЕМЯ ОТДЫХА.

4.1. РАБОТНИКУ устанавливается ненормированный рабочий день.

4.2. РАБОТНИКУ устанавливается ежегодный отпуск продолжительностью :

новной 24 рабочих дней;

полнительный 6 рабочих дней.

5. РАЗМЕР ОПЛАТЫ.

5.1. РАБОТНИКУ устанавливается :

должностной оклад 250 тысяч 2 руб. в месяц;

емии и другие выплаты в соответствии с положением об
оценке труда.

5.2. ПРЕДПРИЯТИЕ берет на себя обязательства с учетом инфляции
рассматривать размер заработной платы.

6. ПОРЯДОК ПРЕКРАЩЕНИЯ ДЕЙСТВИЯ КОНТРАКТА, ЗАКЛЮЧЕНИЯ НОВОГО
КОНТРАКТА, ИЗМЕНЕНИЯ УСЛОВИЙ КОНТРАКТА.

6.1. ПРЕДПРИЯТИЕ не менее чем за месяц до истечения срока конт-

та обязано предупредить РАБОТНИКА о возможности продолжения трудовых отношений и заключении нового контракта, заключения контракта иных условиях или прекращении трудовых отношений.

6.2. РАБОТНИК не позднее чем за две недели до истечения срока контракта обязан заключить новый контракт с ПРЕДПРИЯТИЕМ или сообщить администрации об увольнении после окончания действия контракта.

6.3. Контракт составляется в двух экземплярах каждый из которых имеет равную юридическую силу.

6.4. В течении действия контракта по обоюдному согласию ПРЕДПРИЯТИЯ и РАБОТНИКА условия контракта могут быть изменены.

7. ПОРЯДОК РАССМОТРЕНИЯ СПОРОВ.

7.1. Споры сторон рассматриваются в порядке установленном действующим Законодательством РФ.

7.2. В случае расхождения условий контракта с Трудовым Законодательством РФ при предоставлении последним РАБОТНИКУ больших льгот социальных гарантий следует руководствоваться Законодательством.

8. ДРУГИЕ УСЛОВИЯ ДОГОВОРА, СВЯЗАННЫЕ СО СПЕЦИФИКОЙ ТРУДА.

ПРЕДПРИЯТИЕ :

Макаровский В.И.
(ф.и.о.)
г. Москва
105023, ул. Семеновская, д. 40



РАБОТНИК :

Андрейчук А.И.
(ф.и.о.)

Паспорт серии KKVI-М50
№ 653759

выдан УВД г. Зеленоград
"7" июль 1980г.

Прописан Мос. обл. г. Раменское
ул. Красногорская, д. 26, кв. 35

Подпись Андрейчук

January 21, 1994

AGREEMENT
REGARDING CONFIDENTIALITY OF COMMERCIAL
AND OTHER SECRETS OF THE COMPANY

"Az" Research & Production Company, JSC hereinafter referred to as the "Company" represented by V.A.Arkhangelsky, Director General, and citizen
Antropov Alexandre Mikhailovich
agree as follows:

The Company confides to citizen

Antropov Alexandre Mikhailovich

information defined by the ORDER No. 26 dated December 28, 1993 as commercial and other secrets of the Company.

Citizen Antropov Alexandre Mikhailovich shall not disclose the information comprising the commercial and other secrets of the Company as defined by the ORDER No. 26 dated December 28, 1993.

In case of a breach of this obligation citizen Antropov A. M. shall be subject to civil, administrative, and in exceptional cases criminal liability in accordance with the legislation in force of the Russian Federation. The term [of this Agreement] shall be 5 years.

COMPANY:

V.A.Arkhangelsky

Address: 105023, Moscow
B.Semyonovskaya, 40

EMPLOYEE:

Antropov A.M.

Passport XXVI-MIO No. 653759,
issued by Int.Aff.Dept, Zelenograd
on May 07, 1980

Registered residence: Moscow Region,
Ramenskoye, Krasnoarmeiskaya Ul., 19-136

SIGNED: V.A.Arkhangelsky
SEALED: Az Corporate Seal

SIGNED: A.M.Antropov

EXHIBIT F - Agreement regarding confidentiality of commercial and other secrets of the company, A.M.Antropov

21.01.94г.

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Ф
ДОГОВОР О ВВЕРЕНИИ КОММЕРЧЕСКОЙ И ИНОЙ ТАЙНЫ ПРЕДПРИЯТИЯ.

АО Научно-производственная фирма "Аз" в лице Генерального директора Архангельского В.А. именуемая в дальнейшем Предприятие и гражданин Андрей Александров Михайлович
(ф.и.о.)

включают договор о нижеследующем.

Предприятие представляет гражданину

Андрей Александров Михайлович
(ф.и.о.)

сведения определенные ПРИКАЗОМ N 26 от 28 декабря 1993г. как коммерческая и иная тайна предприятия.

Гражданин Андрей Александров Михайлович
(ф.и.о.)

язуется не разглашать сведения представляющие коммерческую и иную тайну Предприятия определенную ПРИКАЗОМ N 26 от 28 декабря 1993г. в случае нарушения данного обязательства гражданин Андрей А.М.

несет гражданскую, административную, а в
(ф.и.о.)

ключительных случаях уголовную ответственность в соответствии с действующим законодательством РФ. ст. 190 ч. 5

ПРЕДПРИЯТИЕ :

Архангельский В.А.
(ф.и.о.)

с 105023, Москва, Б.Семенская ул., д.40



РАБОТНИК :

Андрей А.М.
(ф.и.о.)

Паспорт серии ХХVI - НЮ
N 653 759

выдан УВД г. Зеленограда
" . . . " мая 1990г.

Прописан 140100 д/с. общ. г. Раменское
улица Южно-Богородская д.26 кв.35

Подпись Андрей

Translated from Russian

"AZ" RESEARCH & PRODUCTION COMPANY, JSC

ORDER

December 28, 1993

No. 26

Moscow

To provide for the safekeeping of the commercial and other secrets of the Company in order to protect it against unfair competition and to protect the rights of authorship,

I SHALL ORDER:

To enforce, starting January 1, 1994, the list of information and materials comprising the commercial and other secrets of the Company (the list is attached).

Disclosure, transfer and unfair use of information and materials comprising the commercial and other secrets of the Company shall result in civil, administrative, and in some cases criminal liability in accordance with the legislation in force of the Russian Federation.

Against employees who have breached the commercial and other secrets of the Company disciplinary punishment may also be undertaken.

The commercial and other secrets of the Company can not include information on environmental pollution, breach of antimonopoly legislation, non-compliance with labor safety regulations, selling products harmful to public health, as well as on other breaches of the RF legislation and damages inflicted thereby.

Director General

(signed) V.A.Arkhangelsky

АО НАУЧНО-ПРОИЗВОДСТВЕННАЯ ФИРМА "АЗ"
ПРИКАЗ
28.12.93 г.
Москва

№ 26

G 64

В целях обеспечения сохранности коммерческой и иной тайны предприятия для защиты от недобросовестной конкуренции, а также защиты авторских прав

ПРИКАЗЫВАЮ:

Ввести с 1 января 1994 г. список сведений и материалов представляющих коммерческую и иную тайну предприятия (список прилагается).

Разглашение, передача и недобросовестное использование сведений и материалов представляющих коммерческую и иную тайну влечет за собой гражданскую, административную, а в ряде случаев уголовную ответственность в соответствии с действующим законодательством РФ.

К сотрудникам предприятия нарушившим коммерческую и иную тайну предприятия могут быть применены также дисциплинарные меры.

К коммерческой и иной тайне предприятия не могут быть отнесены сведения о загрязнении окружающей среды, нарушении антимонопольного законодательства, несоблюдении безопасных условий труда, реализации продукции приносящей вред здоровью населения, а также других нарушений законодательства РФ и размерах причиненного при этом ущерба.

Генеральный директор

В. А. Архангельский

EXHIBIT G – Order Regarding
Confidentiality, in original Russian

Translated from Russian

APPROVED
Director General of "Az" RPC, JSC
(signed) V.A.Arkhangelsky

**LIST
of Information and Materials Comprising
Commercial and Other Secrets of the Company**

1. Information on financial and economic, production and commercial activities of the Company (other than included in the List of Information which in accordance with the legislation of the Russian Federation can not comprise commercial secrets).
2. Information on analysis of production and economic activities of the Company.
3. Information contained in the business plan and in other plans of the Company.
4. Information contained in the development forecasts of the Company.
5. Information on labor remuneration and social support to the employees of the Company.
6. Results of market research and materials related thereto.
7. Original methods of planning, forecasting and market research used at the Company, financial know-how.
8. Information contained in contracts with suppliers and contractors.
9. Drafts of plans of the Company, contracts, pricing and materials related thereto.
10. Rates and standards on utilization of labor, material and financial resources at the Company.
11. Research, design, project, and technological documentation of the Company.
12. Information on original design, project, and technological developments and improvements, technical knowledge, discoveries and inventions.
13. Technical and economic specifications of the Company's products, as well as assemblies and components thereof (except information used under permission of the Company's management for advertising, public relations, exhibitions, scientific seminars and symposia; and other generally known information).
14. Results obtained from testing experimental samples of new products of the Company.
15. Results of experimental research and development.

EXHIBIT H - List of information and materials comprising commercial and other secrets of the company - page 1 of 2

16. Information on complaints received by the Company, negative comments of the users regarding Company's products and quality thereof, information on maintenance services.

17. Confidential information and data on third parties (employees, contractors, suppliers, customers, clients, buyers).

Deputy Director General -
Economics & Finance

(signed) V.Yu.Naumov

УТВЕРЖДАЮ
Генеральный директор АО НПФ "АЗ"

С/М
В.А. Архангельский
28.12.93

СПИСОК
сведений и материалов представляющих коммерческую
и иную тайну предприятия.

1. Сведения характеризующие финансово-хозяйственную, производственную и коммерческую деятельность предприятия (если они не входят в перечень сведений, которые согласно законодательству РФ не могут составлять коммерческую тайну).
2. Материалы по анализу производственно-хозяйственной деятельности предприятия.
3. Сведения содержащиеся в бизнес-плане, а также иных планах предприятия.
4. Сведения содержащиеся в прогнозах развития предприятия.
5. Сведения об оплате труда и социальной помощи работникам фирмы.
6. Результаты маркетинговых исследований рынка, а также материалы относящиеся к ним.
7. Оригинальные методы планирования, прогнозирования, маркетинговых исследований применяемых на предприятии, финансовые "ноу-хау".
8. Сведения содержащиеся в договорах с поставщиками и подрядчиками.
9. Проекты планов предприятия, договоров, цен, а также материалы относящиеся к ним.
10. Нормы и нормативы использования трудовых, материальных, финансовых ресурсов на предприятии.
11. Научная, конструкторская, проектная, технологическая документация предприятия.
12. Сведения по оригинальным конструкторским, проектным, технологическим разработкам и усовершенствованиям, "ноу-хау", открытиям и изобретениям.
13. Технико-экономические характеристики изделий предприятия, а также их отдельных узлов и комплектующих (за исключением сведений используемых с разрешения руководства предприятия для рекламы, паблик релейшнз, выставок, научных семинаров и симпозиумов; иных общезвестных сведений).
14. Параметры полученные при испытании опытных образцов новых

изделия предприятия.

15. Результаты опытных исследований в научных и технических работах.

16. Сведения по полученным предприятием рекламациям, негативные отзывы пользователей о продукции предприятия и ее качестве, данные о сервисном обслуживании.

17. Сведения содержащие информацию о третьих лицах (служащих, подрядчиках, поставщиках, заказчиках, клиентах, покупателях), носящие конфиденциальный характер.

Зам. Генерального директора
по экономике и финансам



/ В. Ю. Наумов /

AGREEMENT

Research and production cooperative "Az" in the person of Lavrentyev N.A., acting in accordance with the Charter of RPC "Az", on the one side, and the Executor

Antropov Alexandr Mikhailovich

passport XXVI-MIO № 653759 issued on 16 May 1980 by UBD Zelenograd

address Moscow region, Ramenskoye, Krasnoarmeiskaya St., 26 - 35 telephone _____

family status single

on the other side, have concluded the present Agreement whereby it is agreed as follows:

Subject of the Agreement

1. Type of work: Development of schematics and adjustment of prototypes of plates of electrical equipment for "PlasmAz" module, development of files for PICAD for printed circuit boards.

2. Term of work fulfilment June - July 1991

3. Grounds for payment

(note about the fulfilment and acceptance of work)

4. Payment for the fulfilled work two thousand eight hundred roubles

(amount in words)

To be paid in equal shares for 2 months

Customer:

Chairman of RPC "Az"

(signed) N.A.Lavrentyev

(signed) A.M.Antropov Executor

К "Андропову"
1991 г.

"1" июля

1991 г.

3

ДОГОВОР

Научно-производственный кооператив "АЗ" в лице председателя
Лаврентьева Н.А., действующего в соответствии с уставом НПК "АЗ"
одной стороны и исполнитель

О. Андропов Александр Михайлович
орт ККУ-МЮ № 653759 выдан УВФ г. Зенеград
с. Раменское Мар. б-р. ул. Краснодарская 26 Телефон -
иное положение хочет

другой стороны, заключили настоящий договор о нижеследующем:

Предмет договора

Именование работ: Разработка принципиальных
схем и схема основных образцов типов эле
ментов "Планеты", разработка фасадов
на PICAD для разработки печатной платы.

Срок выполнения работ июль - июль 1991 г.
Основание для оплаты

(отметка о выполнении и принятии работ)

Стоимость выполненных работ Две тысячи восемьсот рублей.
(сумма прописью)
составить рабочие документы в течение 2
месяцев

Чек:

Председатель НПК "АЗ"

Н.А.Лаврентьев
19 г.

Андропов Исполнитель

EXHIBIT I - Agreement on Work Performance
with A. M. Antropov, in original Russian

налично

удержано

сумма на руки

II/II

MC/H

Schedule on development and production of Plasma generator, written by hand by Mr. Sinyagin (as the proof of his personal involvement in the production process at Az premises)

System "Plasma Generator , two-jet"

Responsible person: Sinyagin O.V.

Composition:

- Electrode assemblies: cathode, anode	Sinyagin, Dmitriev
- Reducing unit:	Sinyagin, Dmitriev
- arms for electrode assemblies fixing	
- magnet conductor with coils	
- device for reagent pipe fixing	
- pneumo-mechanical unit with position sensors	
- water, air, gases, electrical, electronical, solenoid, high frequency connections	
- protective shield, housing	
- ignition system	Antropov
- current amplifiers in coils	Antropov
- generator starter controller	Antropov
- engineer desk of manual control	Antropov

EXHIBIT J - Written schedule of work, O.V.Sinyagin/A.M.Antropov

Under "Генераторы" (2nd page) 5

06: Синем О.П.

Сосед.

- засыпание яиц 10000, под Синем
Донжон
- Угольное сжигание Синем
Донжон
- спасение для хранения яиц
- механизмы с конвейорами (переноска)
- ускорство циркуляции отработки
- пневмо-механический 72066 с
- газификация погребов
- присоединение к багаж, газам, газобаллон 01-67, багаж инвентаря, снаряжение конвейором
- яицами ящики
- Блок погреба Аэродром
- Техническое обслуживание Аэродром
- Конвейер-загрузка и выгрузка яиц Аэродром
- (Изображение) яицами привод гибкий Аэродром

EXHIBIT J – Handwritten Work Schedule, in
original Russian

[22] Date of receipt
Priority

Incoming N
001224

[21] Registration N
95100180
(sealed)

13 January 1995
Research Institute of
State Patent Expertize
(sealed)

APPLICATION
on issuing the patent of the Russian Federation on invention

Presenting documents listed below we ask you to issue the Patent of Russia Federation on the name of the Applicant

[71] Applicant: Research and Production Company "Az" JSC
105023 Moscow, B.Semenovskaya St., 40

[54] Name of invention
Device for Treating Planar Elements with Plasma Jet

[98] Postal address
105023 Moscow, B.Semenovskaya St., 40 RPC "Az", Patent Dept.
Phone: 369 95 36

List of enclosed documents	Pages in one doc	Q-ty of copies	
description of invention	10	3	
claims	2	3	
drawings and other materials	3	3	
synopsis	1	3	
receipt for fee payment for application for expertize	1	1	[x] applicant is the employer and terms of i.2 Sect.8 Patent Law are followed
power of attorney proving powers for signing	1	1	
other documents			
Copy of prototype	1	1	

[72] Authors	Residing address	Signature of author(s) transferring the right for obtaining the Patent to Applicant; date
Tokmulin Iskander Malikovich	140013 Moscow region, Lyubertsy, Voinov-Internatsionalistov St., 8 - 175	(signed)

Bagriy Igor Petrovich

141730 Moscow region, Lobnya,
Montazhnikov St., 10 - 11

(signed)

See enclosure

Signature Director General RPC "Az" JSC (signed) V.A.Arkhangelsky
Stamped "Az" Corporate Stamp

APPLICATION (Enclosure)

72 Author([97] Residing address	Signature(s) of author(s)
Balats Boris Mikhailovich	111020 Moscow, Ukhtomskaya St., 13 - 43	(signed)
Sinyagin Oleg. Vyacheslavovich	141120 Moscow region Fryasino, Vokzalnaya St., 19-135	(signed by I.M. Tokmulin basing on Power of Attorney)
Virivets Alexey Borisovich	127577 Moscow, Severniy boulevard, 5A - 112	(signed)
Shamshurin Vyacheslav Gennadyevich	141730 Moscow region Lobnya, Krasnopolyanskaya St., 35 - 124	(signed)
Antropov Alexandr Mikhailovich	140143 Moscow region Ramenskoye, Krasnoarmeiskaya St., 26-35	(signed)

Director General RPC "Az" JSC

Signed: V.A.Arkhangelsky

Sealed: "Az" Corporate Seal

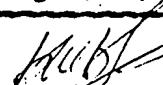
Заполняется
НИИГПЭ

[22] Дата поступления 13 ЯНВ 1995		Входящий № 002224	[21] № по документу 95100380												
Приоритет ГПЭ от А № 20		[51] МПК	ЭО 24 ЯНВ 1995												
<p align="center">ЗАЯВЛЕНИЕ о выдаче патента Российской Федерации на изобретение</p> <p>Представляя указанные ниже документы, прошу (просим) выдать патент Российской Федерации на имя Заявителя.</p> <p>[71] Заявитель(и): Акционерное общество Научно-производственная Фирма "АЗ" 105023. Москва, Б.Семёновская ул.д.40</p> <p align="right">В Комитет Российской Федерации по патентам и товарным знакам 121858 Москва, Бережковская наб., 30, к.1 НИИГПЭ</p> <p>Код организации по ОКПО, для иностранных заявителей – код страны по стандарту ВОИС СТ.3 (если он установлен)</p> <p align="right">I6963545</p>															
<p>(указывается полное имя или наименование заявителя(ей) и его(их) местожительство или место нахождение. Данные о местожительстве авторов-заявителей приводятся в графе с кодом 97)</p> <p><input type="checkbox"/> Прошу (просим) установить приоритет изобретения по дате:</p> <p><input type="checkbox"/> подачи первой (ых) заявки (ок) в стране-участнице Парижской конвенции (п. 2 ст. 19 Закона). <input type="checkbox"/> поступления более ранней заявки в Патентное ведомство в соответствии с п.4 ст. 19 Закона <input type="checkbox"/> поступления первоначальной заявки в Патентное ведомство в соответствии с п.5 ст. 19 Закона <input type="checkbox"/> поступления дополнительных материалов к более ранней заявке (п.3 ст. 19 Закона)</p> <p>(заполняется только при испрашивании приоритета более раннего, чем дата поступления заявки в Патентное ведомство)</p> <table border="1"> <tr> <td><input type="checkbox"/> № первой, более ранней, первоначальной, заявки</td> <td><input type="checkbox"/> Дата испрашиваемого приоритета</td> <td>[33] Код страны подачи по СТ.3 (при испрашивании конвенционного приоритета)</td> </tr> <tr> <td>1.</td> <td></td> <td></td> </tr> <tr> <td>2.</td> <td></td> <td></td> </tr> <tr> <td>3.</td> <td></td> <td></td> </tr> </table> <p>[54] Название изобретения "Установка для плазмоструйной обработки пластин"</p> <p>[98] Адрес для переписки (полный почтовый адрес, имя или наименование адресата) 105023. г.Москва, ул.Б.Семёновская, 40. АОНПФ "АЗ" Патентная служба</p> <p>Телефон: 369-95-36. Телекс: Факс: </p> <p>[74] Патентный поверенный (полное имя, регистрационный номер) </p> <p>Телефон: Телекс: Факс: </p>				<input type="checkbox"/> № первой, более ранней, первоначальной, заявки	<input type="checkbox"/> Дата испрашиваемого приоритета	[33] Код страны подачи по СТ.3 (при испрашивании конвенционного приоритета)	1.			2.			3.		
<input type="checkbox"/> № первой, более ранней, первоначальной, заявки	<input type="checkbox"/> Дата испрашиваемого приоритета	[33] Код страны подачи по СТ.3 (при испрашивании конвенционного приоритета)													
1.															
2.															
3.															

Заявление сreckвизитами, проставленными НИИГПЭ, является уведомлением о поступлении заявки.

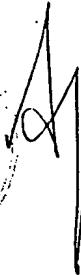
Перечень прилагаемых документов:		кол-во л. в 1 экз.	кол-во экз.	Основание для возникнове- ния права на патент (без представления докумен- та):
<input checked="" type="checkbox"/> описание изобретения		10	3	
<input checked="" type="checkbox"/> формула изобретения (кол-во независимых пунктов 1)		2	3	
<input checked="" type="checkbox"/> чертеж(и) и иные материалы		3	3	
<input checked="" type="checkbox"/> реферат		1	3	
<input checked="" type="checkbox"/> документ об уплате пошлины				
<input checked="" type="checkbox"/> за подачу заявки				
<input checked="" type="checkbox"/> за проведение экспертизы		1	1	
<input type="checkbox"/> документ, подтверждающий наличие оснований для:				
<input type="checkbox"/> освобождения от уплаты пошлины				
<input type="checkbox"/> уменьшения размера пошлины				
<input type="checkbox"/> копия(и) первой(ых) заявки(ок) (при испрашивании конвенционного приоритета)				
<input type="checkbox"/> перевод заявки на русский язык				
<input checked="" type="checkbox"/> доверенность, удостоверяющая полномочия Харханельского на право подписи		1	1	
<input checked="" type="checkbox"/> другой документ (указать)		1	1	
Копия прототипа		54		
72 Автор(ы)	97 Адрес местожительства (для иностранцев - код страны по стандарту ВОИС СТ.3, если он установлен)	Подпись(и) автора(ов), переуступившего(их) заявителю право на получение патента; дата		
Токмулин Искандер Маликович	140013 Москов.обл. г.Люберцы ул.Воинов-Интернационалистов д.8 кв.175	<i>И.Токмулин</i>		
Багрий Игорь Петрович	141730 Москов.обл. г.Лобня ул.Монтажников д.10 кв.11	<i>И.Багрий</i>		
См. продолжение на дополнительном листе.				
Я (мы) _____ (Фамилия, имя, отчество) прошу(просим) не упоминать меня(нас) как автора(ов) при публикации сведений о заявке, о выдаче патента				
Подпись(и) автора(ов): Правопреемник автора, переуступивший заявителю право на получение патента (полное имя или наименование, место- жительство или местонахождение, подпись, дата):				
Подпись: Генеральный директор АОНПФ "АЗ"				
В.А.Архангельский				
подпись(и) заявителя(ей) или патентного поверенного: дата подписи(ей) (при подписании от имени юридического лица подпись руководителя удостоверяется печатью)				

ЗАЯВЛЕНИЕ (продолжение)

72 Автор (ы)	97 Адрес места жи- тельства	Подпись(и) автора(ов)
Балац Борис Михайлович	III020 Москва ул.Ухтом- ская,13 кв.43	
Синягин Олег Бячеславович	I 41120 Московская обл. г.Фрязино, ул.Вокзальная д.19 кв.135	
Вироцев Алексей Борисович	I 27577 Москва Северный бульвар д.5А кв.102	
Шамтурин Вячеслав Геннадьевич	I 41730 Московская обл. г.Лобня, ул.Краснополянская д.35, кв.124.	
Антропов Александр Михайлович	I 40143 Московская обл. г.Раменское ул.Красно- армейская д.26 кв.35	

Генеральный директор
АОНКР "АЗ"




B.A. Архангельский

POWER OF ATTORNEY

I, Sinyagin Oleg Vyacheslavovich, entrust Tokmulin Iskander Malikovich to sign on my behalf the Applications on Patents co-invented by me, and other documents needed for patenting, including Agreements on money reward.

01 January 1995

(signed) Sinyagin O.V.

16

(095) 536-29-98

Куриковъ.

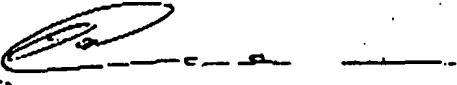
Токмалину Исаандару

В АО НПФ "АЗ"

Доверенность

Я, Синягин Олег Валерьевич,
доверяю Токмалину Исаандару Ильи-
чевичу подписать все документы
заслушив на месте, в координа-
ции с его адвокатом, а также
составлять документы, необходимы-
е для представления, виноват
гражданина в соответствии с законом.

01 ноября 1995.


/Синягин О.В/EXHIBIT L - Power of Attorney from Sinyagin
to Tokmulin, in original Russian

Eurotrade AB
50 Gothenburg, Sweden
reg. no. 556206-7610
VAT no. SE556206761001

INVOICE

PAGE 2

DATE No.

95.03.14 501133

YOUR DATE AND ORDER NO.

950220

INVOICE PAYER

INVOICE RECEIVER SUN2137

Line	Description	CM	Quant	Unit	U	TOTAL
				Price	M	
010/0130	CONTROL UNIT OF MEDICAL S11 SYSTEM MRI OBRAZ IN COMPLETE SET		1	2730,00	P	2730,00
				B/FWD		

SPECIFICATION OF PARTS:

2 PCS ACTUATOR CARR 32X200X2/D24CB
 1 PC LOW SPEED MOTOR D24C/2400
 1 PC LIMIT SWITCH CAXB 32X200
 2 PCS ROD END 575-32
 2 PCS REAR MOUNTING BRACKET 580-32
 2 PCS CAEG 12-24R-T1
 2 PCS CAEG 10-24C
 1 PC CAUP24-200
 1 PC CAEA DB-13
 1 PC CAEG LS

--CERTIFICATE OF GUARANTEE AND QUALITY--
 THIS IS TO CERTIFY THAT THE PRODUCTS
 DELIVERED AND INVOICED AGAINST THE ABOVE
 ORDER HAVE BEEN MANUFACTURED IN
 ACCORDANCE WITH OUR NORMAL STIPULATIONS
 AND HAVE ALSO BEEN SUBJECT TO OUR
 STANDARD TESTS. FURTHERMORE OUR USUAL
 GUARANTEE ACCORDING TO OUR DELIVERY
 CONDITIONS WILL APPLY.

THE COUNTRY OF ORIGIN, IS SHOWED AS A
 CODE IN COLUMN "CM", AND THE CODE IS
 EXPLAINED AT THE BOTTOM OF EACH PAGE.

SKF EUROTRADE AB



Bank account	SKANDINAViska ENSKILDA BANKEN	Rounding	Amount to pay
5738 82 154 68	Deutsche Mark DEM	0,00	2730,00

CM= 11-SWEDEN, 15-UK, 16-NEDERLAND, 18-GERMANY, 21-FRANCE, 28-SPAIN, 29-ITALY, 72-US
 22-SWITZERLAND, 23-AUSTRIA, 47-CHINA, 51-JAPAN, 53-SINGAPORE, 56-MALAYSIA
 TELEPHONE: +46-31-371000 TELEFAX: +46-31-371222 TELEX: 2350

SKF Eurotrade AB
S-50 Gothenburg, Sweden
g.no. 556206-7610

J VAT no. SE556206761001

INVOICE RECEIVER SUN2137
AO NAUCHNO-PROIZVODSTVENNAYA
FIRMA "AZ"
UL.B.SEMENOVSKAYA 40
105023 MOSCOW

RUSSIA

CONSIGNEE ADDRESS
AO NAUCHNO-PROIZVODSTVENNAYA
FIRMA "AZ"
UL.B.SEMENOVSKAYA 40
105023 MOSCOW

RUSSIA

TRANSPORT MODE
TNT = EXPRESS

DELIVERY CONDITIONS
C MOSCOW

SKF REFERENCE

Hans Pilquist

YOUR REFERENCE

CONTRACT NO. SP002

PRODUCT DESCRIPTION
8428 800 LINEARE ACTUATORS
TOTAL GOODS VALUE IN DEM

INVOICE PAGE 1
DATE No.
95.03.14 501133
YOUR DATE AND ORDER NO.
950220

INVOICE PAYER
AO NAUCHNO-PROIZVODSTVENNAYA
FIRMA "AZ"
UL.B.SEMENOVSKAYA 40
105023 MOSCOW

RUSSIA
Insurance is included to
the final destination.

PAYMENT CONDITIONS

PREPAYMENT
TO OUR ACC. NO: 5738 82 154 68
SKANDINAVISKA ENSKILDA BANKEN
L/C NO:
SKF Order No.
1995D01350

Copy No. DDCD
08

QUANT.	NET KG	VALUE IN DEM
1	13,0000	2.730,00
		2.730,00

TRANSPORT PACKAGE NOS.
000415891

NUMBER OF PACKAGES
1

TOTAL GROSS WEIGHT 14.0000 Kg
TOTAL NET WEIGHT 13.0000 Kg

Specification N° 1
to the Contract n° 6 of 26th May 1994

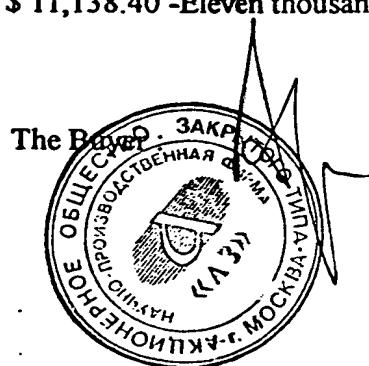
Item	Description	Q-ty	Unit price	Total
		(pcs)	(in US Dollars)	
1	1259C02000RV MFC - 2000 sccm range - 4VCR male fitting - Viton seal	2	1265,00	2530,00
2	1259C10000RV MFC - 10000 sccm range - 4VCR male fitting - Viton seal	2	1265,00	2530,00
3	TUBING ACCESSORIES including : 11ea Cajon female nut SS4VCR-1 11ea Cajon wall feed-thru SS4VCR61 47ea Cajon metal seals SS4VCR2 11ea Cajon gland SS4VCR3-4-MTW	1 lot	1055,04	1055,04
4	METAL FILTERS Millipore WGFG01	4	449,70	1798,80
5	PRESSURE REDUCERS Air Liquide BS1 n°2 ref. 13271273	3	968,10	2904,30
Total sum in US Dollars.....				10818,14

Total value of the Contract including the cost of shipment, package and transport insurance (CIF Moscow-Airport Sheremetievo) is US \$ 11,138.40 -Eleven thousand one hundred and thirty eight US Dollars and 40 cents).

The Seller :



MKS INSTRUMENTS FRANCE S.A.
 43, rue du Cdt Rolland - BP 41
 F - 93352 LE BOURGET Cedex
 Tel. (1) 48 35 39 39
 Fax. (1) 48 35 32 52
 Télex 233817 MKSF



EXHIBITS M-R – Copies of invoices for components needed to create plasma jet invention

EXHIBIT N

- 5 -

Specification No. 1

The Robotic system.

1. Gencobot IV \$18,630 ea.

- 5.25", 5.24" 2 link arm standard

- 7" vertical travel standard

- 360 rotation travel standard

- includes complete controller and GBSsupport
macro-based system configuration, demonstration,
and diagnostics software package.

Options: Scanning end effector \$2,200 ea.

Pusher sensor \$2222 ea.

- single paddle vacuum gripper with optical
wafer auditing and cross-slotted wafer detection,
Buyer through hole and length configuration

2. Two (2) Wafer Cassette Platforms \$3,960 ea.

- designed to accomodate 100mm, 125mm, 150mm,
200mm wafer cassettes \$7,920 2 ea.

- includes T-bar structure for mounting to baseplate

Options: Precise optical proximity sensing of
wafer cassette presence \$500 ea.

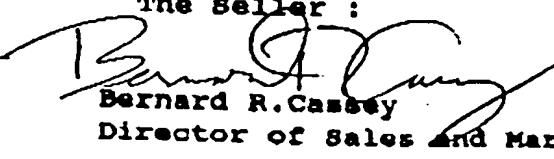
\$1,000 2 ea.

Total Price for Cassettes Presence Detecting,
Wafer Auditing and pusher Transfer Robotic System \$29,750
Less VPA Discount of 15% \$2222 ea. [\$4,460]
Adjusted Price \$ ea.
Shipment, package and transport insurance \$330. ea.

\$25,620

Total sum CIF Moscow (Airport "Sheremetyevo-2") US \$ 7777
including the cost of transportation.

The Seller :


 Bernard R. Casey
 Director of Sales and Marketing

The Buyer :


 Vyacheslav Arkhangelsky
 Director General

EXHIBITS M-R - Copies of invoices for components needed to create plasma jet invention

EXHIBIT O



P

SPECIFICATION No. 1 to contract N2 D/5 from 19.05.1994

Nr.	Article	Order-Nr	Pcs	Price/pcs	Finalprice
1.	PC-Control KUAX 644	644.425.01	1	2.462,50 DM	2.462,50 DM
2.	Proficontrol KUAX 680I withV.24	680.420.04	3	1.462,50 DM	4.387,50 DM
3.	Proficontrol KUAX 680S	680.300.04	1	725,00 DM	725,00 DM
4.	2 step motor module	680.444.02	1	762,50 DM	762,50 DM
5.	Bidirectional counter 24bit, 1	680.454.01	1	431,25 DM	431,25 DM
6.	Digital 8 input /8 output module	680.450.01	3	278,75 DM	836,25 DM
7.	Analog 8 bit 2 inp/2out module	680.441.03	3	837,50 DM	1.912,50 DM
8.	Digital output module	680.452.01	4	170,00 DM	680,00 DM
9.	Digital input module	680.451.01	1	108,75 DM	108,75 DM
10.	Analog 4 output 10V module	680.442.01	2	493,75 DM	987,50 DM
11.	EPROM/RAM module	680.428.01	3	347,50 DM	1.042,50 DM
12.	Set EPROM 2x32x8 k	657.491.20	3	87,50 DM	202,50 DM
13.	Powersupply 380 V AC/24V DC 6A	479.999.07	2	840,00 DM	1.680,00 DM
14.	Programming cable	657.151.03	1	126,56 DM	126,56 DM
15.	Plug-screw terminal 2pin set 3	680.180.01	4	5,88 DM	23,50 DM
16.	Plug screw terminal pin set 12	680.180.02	4	81,25 DM	325,00 DM
17.	D-sub 9pin plug set for bus cb.	680.180.03	7	23,75 DM	166,25 DM
18.	Termin. bus plug set	680.180.07	3	38,25 DM	108,75 DM
19.	Quick screw connector	680.180.05	4	11,69 DM	46,75 DM
20.	Software Kubes 4(+step motor)	680.502.11	1	2.381,25 DM	2.381,25 DM
21.	Software Vibes	680.500.11	1	1.212,50 DM	1.212,50 DM
22.	Handbook E308GB		1	30,63 DM	30,63 DM
23.	Handbook E326GB		1	30,63 DM	30,63 DM
24.	Handbook E327GB		1	15,31 DM	15,31 DM
25.	Handbook E315GB		1	15,31 DM	15,31 DM
26.	Handbook E307GB		1	30,63 DM	30,63 DM
27.	Speicherbaustein 2xFlash EpPROM 128k x 8/5 V	644.491.01	1	262,50 DM	262,50 DM
	SUMMEN			13.051,83 DM	20.994,31 DM
	Tax 15%				3.149,15 DM
	Final Price				24.143,46 DM

Total price

24.143,46 DM

Transportation

364,00 DM

Custom

95,00 DM

Fee for bank guarantee

195,00 DM

Final price

24.797,46 DM

EXHIBITS M-R – Copies of invoices for components needed to create plasma jet invention

Seller **INTER-Handel**
Sign. Doris Scharfe
Friedebacher Straße 4
01189 Dresden
Tel./Fax: (0351) 403 2130

EXHIBIT P



[Handwritten signature]

ENI Germany

ENI Germany
A Division of Astec Germany GmbH

Sielminger Str. 63
70771 L.-E. Stetten
Tel. (49) 711/94770-0 Fax 94770-25

COMMERCIAL INVOICE

K o p i e

Consignee/Notify

RESEACH AND PRODUCTION CORPORATION 'AZ'
105023, BOLSHAYA SEMENOVSKAYA ATR., 40
MOSCOW, RUSSIA

DATE: 05.01.95

IRREVOCABLE DOC.CREDIT NUMBER: LC024078036
DATE OF ISSUE: 941115
DATE OF AMENDMENT: 941214
NEW DATE OF EXPIRY: 950125

ISSUING BANK:
INCOMBANK;
JOINT-STOCK BANK
UL. NAMETKINA,
D.14, K.1
117420 MOSKAU
RUSSLAND

BENEFICIARY: ENI GERMANY
A DIVISION OF ASTEC GERMANY GMBH
SIELMINGER STR., 63
D-70771 STETTEN

Pos. Item	Menge qty	Art.Nummer part no.	Bezeichnung description of goods	Preis/price CIF MOSCOW
01	1	DCG-4M-EI11000030 S/N 210	'THE POWER SUPPLY OF MEDICAL MRI SYSTEM 'OBRAZ'. PART NUMBER DCG4M - EI11000030 MASTER UNIT. CONTRACT NR. 10/94 OF 131094 CIF MOSCOW, SHEREMETEVO-1'	DEM 28.300,

EXHIBITS M-R – Copies of invoices for components needed to create plasma jet invention

EXHIBIT Q

AMEX

EXPORT - IMPORT Ges.m.b.H.

ELSSLERGASSE 24
A-1130 VIENNA, AUSTRIA
TEL.: **43 1 876 76 00
FAX.: **43 1 876 76 11

R

24.MAY 1994

AZ CORP.
40 B. SEMENOVSKAYA ST.
105023 MOSCOW
RUSSIA
FAX: 007 095 369 06 83
ATT: MR. VIKTOR NAUMOV, DEPUTY DIRECTOR

RE:YOUR ORDER DATED 20. MAY 1994 FOR RECIRCULATING SYSTEM RS44D02
OUR ORDER # 112007

INVOICE # 940 372

PRICES IN US DOLLARS / US \$.

POS. ART.#	DESCRIPTION	QTY	UNIT PRICE	TOTAL PRICE
1. RS44D02	RECIRCULATING COOLER, TEMP. RANGE: -15 TO +35° C, HEAT REMOVAL: 1170 W AT 20 C, PUMP: 1.6 GPM TO 100 PSI (PRE-SET TO 50 PSI), RESERVOIR: 2 L, CONTROL: DIGITAL, 0.1 C INDICATION, PID, STABILITY ± 0.1 C, CONNECTION: 1/4" MPT, 220 V / 50 HZ, 7 AMPS	1	4,825.00	4,825.00

COSTS FOR EXPORT, PACKING, HANDLING, ADMINISTRATION, BANKING, TRANSPORTATION, INSURANCE CIP MOSCOW US \$ 1,100.00

FINAL TOTAL CIP MOSCOW US \$ 5,925.00

IN CASE ORDER AND PREPAYMENT ARE RECEIVED UNTIL 1.JUNE.1994 WE EXCEPTIONALLY CAN GRANT YOU A SPECIAL 10 % DISCOUNT = NET: US \$ 5.332,50

PLEASE TRANSFER THE ABOVE TOTAL AMOUNT INTO OUR ACCOUNT # 0950-38048 AT CREDITANSTALT-BANKVEREIN IN A-1015 WIEN, KÄRNTNER RING 1 AS SOON AS POSSIBLE.

AMEX GES.M.B.H.
ELSSLERGASSE 24
A-1130 VIENNA AUSTRIA
TELEFON: (43 1) 876 76 00
TELEFAX: (43 1) 876 76 11

EXHIBITS M-R – Copies of invoices for components needed to create plasma jet invention

EXHIBIT R

To: Chairman of Research and Production cooperative "Az"
Lavrentyev N.A.

From: Sinyagin O.V.

APPLICATION

I ask you to employ me with RPC "Az" as a senior research worker from 01 May 1991.

I have read the Charter of RPC "Az".

(signed) Sinyagin O.V.
29 April 1991

S

Штабесположение НПК "Аз"
в. Сибирьск. б. 11. Н.
от. Сибирьск. О. В.

Задачи

Такой задачи передана из. Является
в НПК "Аз" из. пониженной. Всегда
назначено выполнение в 1.05 3/2. С
затем в НПК "Аз" ожидается.

С/Сибирьск. О. В./
29.04.91.

EXHIBIT S – Application for Employment of
O. V. Sinyagin, in original Russian

ORDER ON EMPLOYMENT N 58

issued on 01 May 1991 by Research and Production cooperative "Az"

stating that Sinyagin Oleg Vyacheslavovich,
date of birth 13 September 1958

is employed from 01 May 1991
on the full-time basis
as a senior research worker
salary 1600 roubles

Signature of head (signed) N.A.Lavrentyev

Signature of employee (signed) O.V.Sinyagin

01 May 1991

EXHIBIT T - Order on Employment, O.V.Sinyagin

Типовая форма № Т-1 (АСУ)
Утверждена ЦСУ СССР 16.06.80 № 284

Кодовая информация к приказу
(распоряжению) о приемке на работу
(форма № Т-1 (АСУ))

ИФК АЗ 01
предприятие, организация

Личная карточка
№

показателей

2-ре зал

до с 01.03.80

1/е 01.05.80

ПРИКАЗ (РАСПОРЯЖЕНИЕ) № 58
о приеме на работу

01. 05

1991 г.

Фамилия Синягин
Имя Олег Отчество Валентинович

13.09.58

- Зачислить на работу с «01» ледя 1991 г.
- Характер работы помощник
постоянно, временно, сезонно
- по «19 г.
- Вид работы основная
основная, по совместительству
- с испытательным сроком или без него срок испытания
- В цех (отдел) ИФК АЗ 01
- Участок
- Категория персонала рабочий, ИТР, служащий и т. д.
- Табельный номер
- Профессия Водитель сантехник
Должность
- Тарифный разряд (класс или категория квалификации)
Оклад 1600 руб.
- Форма и система оплаты труда
- Условия труда нормальные, тяжелые и вредные, особо тяжелые и т. д.
- Категория служащего руководитель, специалист, технический исполнитель

Надбавка к заработной плате:

- Вид размер
- Вид размер
- Вид размер
- Продолжительность рабочего дня (рабочей недели) при работе с неполным рабочим временем
- Источник комплектования

Подпись руководителя

Подпись работника

О. Синягин 1991 г.

Код списка (фасета)			
Номер личной карточки	Предприятие, организация	Номер приказа (распоряжения)	

Фамилия для перфорации
на обороте

Номер строки	Код списка (фасета)	Код
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
	Код	Размер надбавки
15		
16		
17		
18		X
19		X

Код корректировки

Закодировал

EXHIBIT T – Order for Employment for O. V.
Sinyagin, in original Russian

EMPLOYMENT CONTRACT

1. GENERAL CONDITIONS

AZ Research and Production company, hereinafter referred to as the ENTERPRISE, in the person of Director General Vyacheslav A. Arkhangelsky and

Sinyagin Oleg Vyacheslavovich

hereinafter referred to as the EMPLOYEE, have concluded the present Contract whereby it is agreed as follows:

1.1 The EMPLOYEE Sinyagin Oleg Vyacheslavovich is employed as a

senior research worker

1.2 Work on this Contract is the basic place of work.

1.3 Term of Contract:

Date of beginning of employment 21 January 1994

Date of end of employment 20 January 1995

1.4 Period of probation

(duration of the period of probation)

2. RESPONSIBILITIES OF THE EMPLOYEE

2.1 During the term of Contract the EMPLOYEE is obligated:

- to follow during his employment the demands of the legislation of Russian Federation and other Acts, covering the activity of the ENTERPRISE and its employees;
- to fulfil in a qualitative way and in due time all orders of the immediate superior;
- to follow demands and terms of the Contract;
- to follow demands of the internal regulations of the ENTERPRISE;
- to use the property of the ENTERPRISE carefully, to provide the property to be used effectively;
- to save in the course of work resources, energy, to economize materials, electric power and components;
- to introduce new techniques and technology, to up-date the produced product and to increase its quality;
- to follow safety regulations and fire-prevention measures, to make his subordinates to follow these regulations;
- not to disclose information treated by the ENTERPRISE as confidential, as listed in the printed order N 26 dated 28 December 1993.

2.2 The additional obligations of the EMPLOYEE:

3. OBLIGATION OF THE ENTERPRISE

3.1 During the term of the Contract the ENTERPRISE is obligated:

- to follow in its relations with the EMPLOYEE the Labour legislation of the Russian Federation and the terms of this Contract;
- to arrange the work of the EMPLOYEE, to provide conditions for the safe effective work;
- to equip the working place in accordance with safety regulations and accident prevention measures;
- to assist the EMPLOYEE to increase his qualification at the ENTERPRISE's expense (qualification improvement training, college study and special subjects study);
- to inform the EMPLOYEE about circumstances which may influence fulfilment of the Contract.

3.2 Obligation of the ENTERPRISE on provision of working conditions, indicating real characteristics, compensations and privileges to the EMPLOYEE for the hard, extra hard work and dangerous, extra dangerous working conditions:

3.3 Additional obligations of the ENTERPRISE:

4. WORKING HOURS AND HOLIDAYS

4.1 The EMPLOYEE has irregular working hours.

4.2 The EMPLOYEE has the annual holiday during
basic 24 working days;
(as for the 6-days working week)
additional 6 working days.

5. SALARY

5.1 The EMPLOYEE has:
salary 250,000 roubles per month;
bonus and other payments in accordance with the Salary Regulations

5.2 The ENTERPRISE is obligated to revise the amount of salary in accordance with the inflation rate.

6. TERMINATION OF THE CONTRACT, CONCLUSION OF THE NEW CONTRACT, ALTERATION OF TERMS OF THE CONTRACT

6.1 The enterprise is obligated to inform the EMPLOYEE not less than one month before the termination of the Contract about prolongation of employment contract and conclusion of the new contract, alteration of the terms of the contract or termination of the working relations.

6.2 The EMPLOYEE is obligated not less than two weeks before the termination of the contract to conclude the new contract with the ENTERPRISE or to inform administration about his discharge after the termination of the contract.

6.3 The Contract is written in two copies, both being equally valid.

6.4 Within the period of validity, the terms of the Contract can be changed upon mutual agreement between the ENTERPRISE and the EMPLOYEE.

7. CONSIDERATION OF DISPUTES

7.1 Disputes of the parties are considered in accordance with the acting legislation of the Russian Federation.

7.2 In case of discrepancy between the terms of the Contact and the Labour legislation of the Russian Federation, which provides the EMPLOYEE with more privileges and social guarantees, the Labour legislation shall be followed.

8. OTHER TERMS OF THE CONTRACT DEALING WITH SPECIFIC FEATURES OF WORK

ENTERPRISE

Arkhangelsky V.A.

Address: 105023, Moscow
B.Semenovskaya St.,40

EMPLOYEE

Sinyagin O.V.

Passport XXVI-MIO № 662395
issued by UVD Zelenograd
on 16 May 1980

Address: Moscow region, Fryasino,
Vokzalnaya St.,19 - 136

SIGNED: V.A.Arkhangelsky
SEALED: Az Corporate Seal

SIGNED: O.V.Sinyagin

ТРУДОВОЙ КОНТРАКТ № 91

1. ОБЩИЕ ПОЛОЖЕНИЯ.

АО Научно-производственная фирма "АЗ", именуемая в дальнейшем "ПРЕДПРИЯТИЕ", в лице Генерального директора Архангельского В.А., с одной стороны и гражданин

Синягин Олег Константинович

(Ф.И.О.)

именуемый в дальнейшем "РАБОТНИК" заключили настоящий договор о нижеследующем:

1.1. РАБОТНИК Синягин Олег Константинович
(Ф.И.О.)

принимается на работу в качестве

Ведущего научного сотрудника

1.2. Работа по настоящему договору является основным местом работы.

1.3. Срок действия контракта:

Начало работы 21. января 1994 г.

Окончание работы 20. января 1995 г.

1.4. Срок испытания

(продолжительность испытательного срока)

2. ОБЯЗАННОСТИ РАБОТНИКА.

2.1. РАБОТНИК в течение срока действия контракта обязан:

— в процессе трудовой деятельности выполнять требования Законодательства РФ и иных нормативных актов, действие которых распространяется на ПРЕДПРИЯТИЕ и деятельность должностных лиц;

— качественно и в срок выполнять задания непосредственного руководителя;

— выполнять требования и условия контракта;

— подчиняться требованиям внутреннего трудового распорядка

ПРЕДПРИЯТИЯ ;

- бережно относиться к собственности ПРЕДПРИЯТИЯ, способствовать ее эффективному использованию ;
- в процессе трудовой деятельности осуществлять ресурсо- и энергосбережение, всемерно способствовать экономии материалов, электроэнергии и комплектующих;
- содействовать внедрению новой техники и технологии, обновлению выпускаемой продукции и повышению ее качества ;
- соблюдать правила по охране труда и противопожарной безопасности, следить за соблюдением этих правил подчиненными ;
- не разглашать сведения, представляющие коммерческую и иную тайну ПРЕДПРИЯТИЯ, перечень которых определен Приказом N 26 от 28.12.93г.

2.2. Дополнительные обязанности РАБОТНИКА :

3. ОБЯЗАННОСТИ ПРЕДПРИЯТИЯ.

3.1. ПРЕДПРИЯТИЕ в период срока действия контракта обязано:

- руководствоваться в трудовых отношениях с РАБОТНИКОМ Трудовым Законодательством РФ и условиями настоящего контракта ;
- организовать труд РАБОТНИКА, создать условия для безопасного и эффективного труда ;
- оборудовать рабочее место в соответствии с правилами охраны труда и техники безопасности ;
- содействовать повышению РАБОТНИКОМ своей квалификации за счет средств ПРЕДПРИЯТИЯ (курсы повышения квалификации, учебные заведения и целевые курсы по изучению специальных дисциплин) ;
- сообщать РАБОТНИКУ об обстоятельствах, влияющих на ход выполнения контракта.

3.2. Обязанности ПРЕДПРИЯТИЯ по обеспечению условий работы на рабочем месте с указанием достоверных характеристик, компенсаций и льгот РАБОТНИКУ за тяжелые, особо тяжелые работы и работы с вредными, особо вредными или опасными условиями труда :

7

3.3. Дополнительные обязанности ПРЕДПРИЯТИЯ :

4. РАБОЧЕЕ ВРЕМЯ И ВРЕМЯ ОТДЫХА.

4.1. РАБОТНИКУ устанавливается ненормированный рабочий день.

4.2. РАБОТНИКУ устанавливается ежегодный отпуск продолжительностью :

основной 24 рабочих дней;
(по шестидневной рабочей недели)

дополнительный 6 рабочих дней.

5. РАЗМЕР ОПЛАТЫ.

5.1. РАБОТНИКУ устанавливается :

должностной оклад 305 тыс. руб. в месяц;
премии и другие выплаты бонусы с пополнением
об оплате труда

5.2. ПРЕДПРИЯТИЕ берет на себя обязательства с учетом инфляции
пересматривать размер заработной платы.

6. ПОРЯДОК ПРЕКРАЩЕНИЯ ДЕЙСТВИЯ КОНТРАКТА, ЗАКЛЮЧЕНИЯ НОВОГО
КОНТРАКТА, ИЗМЕНЕНИЯ УСЛОВИЙ КОНТРАКТА.

6.1. ПРЕДПРИЯТИЕ не менее чем за месяц до истечения срока конт-

ракта обязано предупредить РАБОТНИКА о возможности продолжения трудовых отношений и заключении нового контракта, заключения контракта на иных условиях или прекращении трудовых отношений.

6.2. РАБОТНИК не позднее чем за две недели до истечения срока контракта обязан заключить новый контракт с ПРЕДПРИЯТИЕМ или сообщить администрации об увольнении после окончания действия контракта.

6.3. Контракт составляется в двух экземплярах каждый из которых имеет равную юридическую силу.

6.4. В течении действия контракта по обоюдному согласию ПРЕДПРИЯТИЯ и РАБОТНИКА условия контракта могут быть изменены.

7. ПОРЯДОК РАССМОТРЕНИЯ СПОРОВ.

7.1. Споры сторон рассматриваются в порядке установленном действующим Законодательством РФ.

7.2. В случае расхождения условий контракта с Трудовым Законодательством РФ при предоставлении последним РАБОТНИКУ больших льгот и социальных гарантий следует руководствоваться Законодательством.

8. ДРУГИЕ УСЛОВИЯ ДОГОВОРА, СВЯЗАННЫЕ СО СПЕЦИФИКОЙ ТРУДА.

ПРЕДПРИЯТИЕ :

Архангельское В.А.
(ф.и.о.)

Адрес: 105023, Москва
Б. Семеновская ул., д.40

РАБОТНИК :

Синегорин Ю.В.
(ф.и.о.)

Паспорт серии ХХХ-МЮ
N 662395
выдан УМВД г. Зеленограда
"16" 05 1980г.

Прописан Моск. обл. г. Фрязино
ул. Водопроводная д. 13 кв. 136

Подпись



Translated from Russian

January 21, 1994

AGREEMENT
REGARDING CONFIDENTIALITY OF COMMERCIAL
AND OTHER SECRETS OF THE COMPANY

"Az" Research & Production Company, JSC hereinafter referred to as the "Company" represented by V.A.Arkhangelsky, Director General, and citizen

O.V.Sinyagin
agree as follows:

The Company confides to citizen

O.V.Sinyagin

information defined by the ORDER No. 26 dated December 28, 1993 as commercial and other secrets of the Company.

Citizen O.V.Sinyagin shall not disclose the information comprising the commercial and other secrets of the Company as defined by the ORDER No. 26 dated December 28, 1993.

In case of a breach of this obligation citizen O.V. Sinyagin shall be subject to civil, administrative, and in exceptional cases criminal liability in accordance with the legislation in force of the Russian Federation. The term [of this Agreement] shall be 5 years.

COMPANY:

V.A.Arkhangelsky

Address: 105023, Moscow
B.Semyonovskaya, 40

EMPLOYEE:

O.V.Sinyagin
Passport XXVI-MIO No. 662395,
issued by Int.Aff.Dept, Zelenograd
on May 16, 1980
Registered residence: Moscow Region,
Fryazino, Vokzalnaya Ul., 19, Apt.136

SIGNED: V.A.Arkhangelsky
SEALED: Az Corporate Seal

SIGNED: O.V.Sinyagin

EXHIBIT V - Agreement regarding confidentiality of commercial and other secrets of the company, O.V.Sinyagin

21. октября 1994
V

ДОГОВОР О ВВЕРЕНИИ КОММЕРЧЕСКОЙ И ИНОЙ ТАЙНЫ ПРЕДПРИЯТИЯ.

АО Научно-производственная фирма "Аз" в лице Генерального директора Архангельского В.А. именуемая в дальнейшем Предприятие и гражданин Синягин О.В.
(ф.и.о.)

заключают договор о нижеследующем.

Предприятие представляет гражданину

Синягин О.В.

(ф.и.о.)

сведения определенные ПРИКАЗОМ N 26 от 28 декабря 1993г. как коммерческая и иная тайна предприятия.

Гражданин Синягин О.В.

(ф.и.о.)

обязуется не разглашать сведения представляющие коммерческую и иную тайну Предприятия определенную ПРИКАЗОМ N 26 от 28 декабря 1993г.

В случае нарушения данного обязательства гражданин Синягин О.В.

несет гражданскую, административную, а в

(ф.и.о.)

исключительных случаях уголовную ответственность в соответствии с действующим законодательством РФ. Срок действия - 5 лет

ПРЕДПРИЯТИЕ :

Архангельский В.А.
(ф.и.о.)

Адрес 105023, Москва, Б.Семеновская ул., д.40



Подпись



РАБОТНИК :

Синягин О.В.

(ф.и.о.)

Паспорт серии ХХVI-1410

N 662385

выдан МД г. Зеленограда

"16." 05 1980.

Прописан Мос. обл. г. Фрязино
ул. Водяниковая 18 кв 136

Подпись



EXHIBIT V - Confidential Agreement with O. V. Sinyagin, in original Russian

AGREEMENT

Research and production cooperative "Az" in the person of Lavrentyev N.A., acting in accordance with the Charter of RPC "Az", on the one side, and the Executor

Sinyagin Oleg Vyacheslavovich
passport XXVI-MIO № 662395 issued on 16 May 1980 by UBD Zelenograd
address Moscow region, Fryasino, Vokzalnaya St., 19 - 136 telephone _____
family status married, two children

on the other side, have concluded the present Agreement whereby it is agreed as follows:

Subject of the Agreement

1. Type of work: Development of conception of plasma treatment devices, and its separate components: plasma generator, magnet monitoring system, system of discharge excitation, system of feeding and preparation of plasma formation gases.

2. Term of work fulfilment 01 May 1991 - 30 July 1991
3. Grounds for payment _____

(note about the fulfilment and acceptance of work)
work is finished

4. Payment for the fulfilled work one thousand six hundred roubles
(amount in words)

Customer:

Chairman of RPC "Az"

(signed) N.A.Lavrentyev

(signed) O.V.Sinyagin Executor

О Г О В О Р

Научно-производственный кооператив "АЗ" в лице председателя
т. Лаврентьева Н. А. действующего в соответствии с уставом НПК "АЗ"
с одной стороны исполнитель

Ф.И.О. Синягин Олег Викторович
паспорт УМЮ 160580 выдан 16.05.80 УМВД Запорожской Горисполкома
адрес 160-й квд, 9-й Фрязинский, ул. Бонч-Бруевича телефон 13-11-186
семейное положение женат, 2 дочерей
с другой стороны, заключили настоящий договор о нижеследующем:

Предмет договора

1. Пакетование работ: Разработка концепции
учебников профессии "Фармацевт", с
заданием ее выполнить в кратчай-
шие сроки, способом помимо него
чтобы внести изменения в будущем
разработку, а также подать в подготовке
и изображении пакета

2. Срок выполнения работ 01.05.81 - 30.06.81
3. Основание для оплаты

Работы выполнены Максим (отметка о выполнении и принятии работ)

4. Стоимость выполненных работ Одна тысяча шестьсот рублей
(сумма прописью)

Заказчик:

Председатель НПК "АЗ"

Н.А.Лаврентьев

19. Г.

М.П.

Исполнитель

EXHIBIT W - Agreement on Work
Performance with O. V. Sinyagin, in original
Russian

научлено

выдержано

СУММА ВАРУБЛЯ

р/н

мс/н

SIGNED DECLARATION AND POWER OF ATTORNEY:

Applicants are attaching hereto two Declarations and Powers of Attorney in the above captioned Application, identical except for the signatures thereon. The first is signed by Iskander M. Tokmulin, Igor P. Bagriy and Alexei B. Virovets. The second is signed by Boris M. Balats and Vyacheslav V. Shamshurin.

A copy of the Notification of Missing Requirements dated August 12, 1997, from the U.S. Patent and Trademark Office is attached herewith for processing purposes.

REMARKS:

This U.S. Application is based on an original PCT Application, PCT/RU95/00063. In both the original PCT Application and in the present U.S. Application there are seven inventors: Iskander M. Tokmulin; Igor P. Bagriy; Boris M. Balats; Oleg V. Sinyagin; Alexei B. Virovets; Vyacheslav G. Shamshurin; and Aleksandr M. Antropov. Mr. Tokmulin, Mr. Bagriy and Mr. Virovets all live in the United States; upon information and belief Mr. Sinyagin and Mr. Antropov also live in the United States. Mr. Balats and Mr. Shamshurin live in the Russian Federation.

Because of this split in residence, signatures for the Declaration and Power of Attorney and for the Assignment were collected on two separate copies of identical forms: one copy for the

U.S. residents and one copy for the Russian residents. There are no differences between copies of these signed forms except for the signatures thereon.

The signatures of Oleg V. Sinyagin and Aleksandr M. Antropov, the two of the total seven inventors remaining, do not appear on either Declaration. These two inventors refused to sign a Declaration and Power of Attorney. Accordingly, a Petition is being contemporaneously filed under 37 CFR Ch. 1, 1.47 requesting that the U.S. Patent and Trademark Office accept this Application without the two missing inventors' signatures on the Declaration and Power of Attorney. Relevant supporting Declarations and Exhibits are attached to the Petition requesting that this Application be accepted with only five of the total seven signatures required.

Two signed Assignment forms, with a corresponding Assignment Recordation form, identical except for the signatures that appear thereon, are also attached assigning this Application to Az Corporation, a corporation under the laws of the Russian Federation. The signatures of Oleg V. Sinyagin and Aleksandr M. Antropov are also absent from these Assignments, as these two inventors also refused to sign the Assignment in this Application. Applicants' Petition also requests that the Commissioner to accept the Assignments in this Application absent two of the total seven necessary signatures and record the same..

Applicants are also filing herewith a Declaration Claiming Small Entity Status (Small Business Concern) in the name of Az Corporation, the assignee in the present Application.

Applicant or Patentee: Tokmuli et al.

Docket No.: P-9701 ISK

Serial or Patent No.: 08/860,763

Filed or Issued: July 11, 1997

For: Device for Treating Planar Elements with a Plasma Jet

DECLARATION CLAIMING SMALL ENTITY STATUS

[37 CFR 1.9(f) and 1.27(c)]

SMALL BUSINESS CONCERN

I hereby declare that I am

the owner of the small business concern identified below:
 an official of the small business concern empowered to act on behalf of the concern identified below

NAME OF CONCERN: Az Corporation (Aktionerhoe obshestvo "Nauchno-proizvodstvennaya firma 'Az'"

ADDRESS OF CONCERN: 40 B. Semenovskaya St., 105023 Moscow RUSSIA.

I hereby declare that the above identified small business concern qualifies as a small business concern as defined in 13 CFR 121.3-18, and reproduced in 37 CFR 1.9(d), for purposes of paying reduced fees under section 41(a) and (b) of Title 35, United States Code, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time or temporary basis during each of the pay periods of the fiscal year; and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both.

I hereby declare that rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the invention, entitled: described in

the specification filed herewith
 application serial no. 08/860,763, filed July 11, 1997.
 patent no. , issued

If the rights held by the above identified small business concern are not exclusive, each individual, concern or organization having rights to the invention is listed below and no rights to the invention are held by any person, other than the inventor, who could not qualify as a small business concern under 37 CFR 1.9(d) or by any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

Note: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)

FULL NAME: Az Corporation (Zakrytoe Aktsionerhoe, Obschestvo "Nauchno-proizvodstvennaya firma 'Az'"	<input type="checkbox"/> INDIVIDUAL <input checked="" type="checkbox"/> SMALL BUSINESS CONCERN <input type="checkbox"/> NONPROFIT ORGANIZATION
ADDRESS: 40 B. Semenovskaya St., 105023, Moscow, RUSSIA	
FULL NAME:	<input type="checkbox"/> INDIVIDUAL <input type="checkbox"/> SMALL BUSINESS CONCERN <input type="checkbox"/> NONPROFIT ORGANIZATION
ADDRESS:	
FULL NAME:	<input type="checkbox"/> INDIVIDUAL <input type="checkbox"/> SMALL BUSINESS CONCERN <input type="checkbox"/> NONPROFIT ORGANIZATION
ADDRESS:	

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified declaration is directed.

NAME OF PERSON SIGNING

TITLE

Vyacheslav A. ARKHANGELSKY

Director General

SIGNATURE

DATE

July 31, 1997

RESIDENCE ADDRESS

7-ya Parkovaya St., d.10, kv.18, 105043, Moscow, RUSSIA

UNITED STATES -- PATENT
DECLARATION FOR PATENT APPLICATION

Attorney's Docket No.: P-9701 ISK

As a below-named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

DEVICE FOR TREATING PLANAR ELEMENTS WITH A PLASMA JET

the specification of which

(check one) is attached hereto.

X was filed on July 11, 1997, as
Application Serial No.: 08/860,763,
and was amended on _____.

(if applicable)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s):

Appln. No.	Country	Date Filed	Priority Claimed
95100180	Russia	January 13, 1995	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
PCT/RU95/00063	PCT	April 11, 1995	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
			<input type="checkbox"/> YES <input type="checkbox"/> NO
			<input type="checkbox"/> YES <input type="checkbox"/> NO

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code §112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56(a) which became available between the filing date of the prior application and the national or PCT international filing date of this application:

Appln. Serial No.	Filing Date	Status: Patented, Pending, Abandoned
		<input type="checkbox"/> Patented <input type="checkbox"/> Pending <input type="checkbox"/> Abandoned
		<input type="checkbox"/> Patented <input type="checkbox"/> Pending <input type="checkbox"/> Abandoned
		<input type="checkbox"/> Patented <input type="checkbox"/> Pending <input type="checkbox"/> Abandoned

POWER OF ATTORNEY

I hereby appoint the following attorney(s) and/or agent(s) to prosecute the application entitled DEVICE FOR TREATING PLANAR ELEMENTS WITH A PLASMA JET and to transact all business in the Patent and Trademark Office connected therewith:

HENRY A. MARZULLO, JR., Reg. No. 20,910; HOWARD N. ARONSON, Reg. No. 27,302; and MYRON GREENSPAN, Reg. No. 25,680.

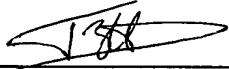
Address all telephone calls to *Myron Greenspan*, at telephone number (914) 723-4300, or to the attorney executing the last document.

Address all correspondence to **LACKENBACH SIEGEL MARZULLO ARONSON & GREENSPAN, P.C.**
at **Penthouse Suite, One Chase Road, Scarsdale, New York 10583 U.S.A.**

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of First or Sole Inventor Iskander M. Tokmulin	Citizenship Russian
RESIDENCE Address -- Street c/o IPEC Precision, 3 Berkshire Boulevard	POST OFFICE Address -- Street (same as residence)
City (Zip) Bethel	City (Zip)
State or Country Connecticut 06801	State or Country
Date	Signature
Full Name of Second Joint Inventor Igor P. Bagriy	Citizenship Russian
RESIDENCE Address -- Street c/o IPEC Precision, 3 Berkshire Boulevard	POST OFFICE Address -- Street (same as residence)
City (Zip) Bethel	City (Zip)
State or Country Connecticut 06801	State or Country
Date	Signature
Full Name of Third Joint Inventor Boris M. Balats	Citizenship Russian
RESIDENCE Address -- Street Ukhtomskaya St., d. 13, kv. 43	POST OFFICE Address -- Street (same as residence)
City (Zip) 111020 Moscow	City (Zip)
State or Country RUSSIA	State or Country
Date 11.08.97	Signature 

X Additional inventors are being named on separately numbered sheets attached hereto.

Full Name of Fourth Joint Inventor Oleg V. Sinyagin'	Citizenship Russian
RESIDENCE Address -- Street	POST OFFICE Address -- Street (same as residence)
City (Zip)	City (Zip)
State or Country	State or Country
Date	Signature
Full Name of Fifth Joint Inventor Alexei B. Virovets	Citizenship Russian
RESIDENCE Address -- Street 144 Painter Road	POST OFFICE Address -- Street (same as residence)
City (Zip) Southbury	City (Zip)
State or Country Connecticut 06488	State or Country
Date	Signature
Full Name of Sixth Joint Inventor Vyacheslav G. Shamshurin	Citizenship Russian
RESIDENCE Address -- Street Krasnopolyanska St., d. 35, kv. 124	POST OFFICE Address -- Street (same as residence)
City (Zip) 141730 Moskovskaya oblast', Lobnya	City (Zip)
State or Country RUSSIA	State or Country
Date 11.08.97	Signature 
Full Name of Seventh Joint Inventor Aleksandr M. Antropov	Citizenship Russian
RESIDENCE Address -- Street	POST OFFICE Address -- Street (same as residence)
City (Zip)	City (Zip)
State or Country	State or Country
Date	Signature

UNITED STATES -- PATENT
DECLARATION FOR PATENT APPLICATION

Attorney's Docket No.: P-9701 ISK

As a below-named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

DEVICE FOR TREATING PLANAR ELEMENTS WITH A PLASMA JET,

the specification of which

(check one) is attached hereto.

X was filed on July 11, 1997, as
Application Serial No.: 08/860,763,
and was amended on _____.

(if applicable)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56(a).

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PCT/RU95/00063	PCT	April 11, 1995	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
			<input type="checkbox"/> YES <input type="checkbox"/> NO
			<input type="checkbox"/> YES <input type="checkbox"/> NO

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code §112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56(a) which became available between the filing date of the prior application and the national or PCT international filing date of this application:

Appln. Serial No.	Filing Date	Status: Patented, Pending, Abandoned
		<input type="checkbox"/> Patented <input type="checkbox"/> Pending <input type="checkbox"/> Abandoned
		<input type="checkbox"/> Patented <input type="checkbox"/> Pending <input type="checkbox"/> Abandoned
		<input type="checkbox"/> Patented <input type="checkbox"/> Pending <input type="checkbox"/> Abandoned

POWER OF ATTORNEY

I hereby appoint the following attorney(s) and/or agent(s) to prosecute the application entitled DEVICE FOR TREATING PLANAR ELEMENTS WITH A PLASMA JET and to transact all business in the Patent and Trademark Office connected therewith:

HENRY A. MARZULLO, JR., Reg. No. 20,910; HOWARD N. ARONSON, Reg. No. 27,302; and MYRON GREENSPAN, Reg. No. 25,680.

Address all telephone calls to *Myron Greenspan*, at telephone number (914) 723-4300, or to the attorney executing the last document.

Address all correspondence to **LACKENBACH SIEGEL MARZULLO ARONSON & GREENSPAN, P.C.**
at **Penthouse Suite, One Chase Road, Scarsdale, New York 10583 U.S.A.**

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of First or Sole Inventor Iskander M. Tokmulin	Citizenship Russian
RESIDENCE Address -- Street c/o IPEC Precision, 3 Berkshire Boulevard	POST OFFICE Address -- Street (same as residence)
City (Zip) Bethel	City (Zip)
State or Country Connecticut 06801	State or Country
Date 09/02/97	Signature  I. TOKMOULINE
Full Name of Second Joint Inventor Igor P. Bagriy	Citizenship Russian
RESIDENCE Address -- Street c/o IPEC Precision, 3 Berkshire Boulevard	POST OFFICE Address -- Street (same as residence)
City (Zip) Bethel	City (Zip)
State or Country Connecticut 06801	State or Country
Date 09/03/97	Signature 
Full Name of Third Joint Inventor Boris M. Balats	Citizenship Russian
RESIDENCE Address -- Street Ukhtomskaya St., d. 13, kv. 43	POST OFFICE Address -- Street (same as residence)
City (Zip) 111020 Moscow	City (Zip)
State or Country RUSSIA	State or Country
Date	Signature

X Additional inventors are being named on separately numbered sheets attached hereto.

Full Name of Fourth Joint Inventor Oleg V. Sinyagin	Citizenship Russian
RESIDENCE Address -- Street	POST OFFICE Address -- Street (same as residence)
City (Zip)	City (Zip)
State or Country	State or Country
Date	Signature
Full Name of Fifth Joint Inventor Alexei B. Virovets	Citizenship Russian <i>Alex</i>
RESIDENCE Address -- Street 144 Painter Road	POST OFFICE Address -- Street (same as residence)
City (Zip) Southbury	City (Zip)
State or Country Connecticut 06488	State or Country
Date 09/02/97	Signature <i>Alex</i>
Full Name of Sixth Joint Inventor Vyacheslav G. Shamshurin	Citizenship Russian
RESIDENCE Address -- Street Krasnopolyanskaya St., d. 35, kv. 124	POST OFFICE Address -- Street (same as residence)
City (Zip) 141730 Moskovskaya oblast', Lobnya	City (Zip)
State or Country RUSSIA	State or Country
Date	Signature
Full Name of Seventh Joint Inventor Aleksandr M. Antropov	Citizenship Russian
RESIDENCE Address -- Street	POST OFFICE Address -- Street (same as residence)
City (Zip)	City (Zip)
State or Country	State or Country
Date	Signature

UNITED STATES -- PATENT
DECLARATION FOR PATENT APPLICATION

Attorney's Docket No.: P-9701 ISK

As a below-named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

DEVICE FOR TREATING PLANAR ELEMENTS WITH A PLASMA JET

the specification of which

(check one) is attached hereto.

X was filed on July 11, 1997, as
Application Serial No.: 08/860,763,
and was amended on _____.

(if applicable)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s):

Appln. No.	Country	Date Filed	Priority Claimed
95100180	Russia	January 13, 1995	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
PCT/RU95/00063	PCT	April 11, 1995	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
			<input type="checkbox"/> YES <input type="checkbox"/> NO
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		<input type="checkbox"/> Patented <input type="checkbox"/> Pending <input type="checkbox"/> Abandoned
		<input type="checkbox"/> Patented <input type="checkbox"/> Pending <input type="checkbox"/> Abandoned



POWER OF ATTORNEY

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HENRY A. MARZULLO, JR., Reg. No. 20,910;

HOWARD N. ARONSON, Reg. No. 27,302; and MYRON

GREENSPAN, Reg. No. 25,680.

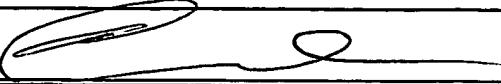
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RESIDENCE Address – Street c/o IPEC Precision, 3 Berkshire Boulevard	POST OFFICE Address – Street (same as residence)
City (Zip) Bethel	City (Zip)
State or Country Connecticut 06801	State or Country
Date	Signature
Full Name of Second Joint Inventor Igor P. Bagriy	Citizenship Russian
RESIDENCE Address – Street c/o IPEC Precision, 3 Berkshire Boulevard	POST OFFICE Address – Street (same as residence)
City (Zip) Bethel	City (Zip)
State or Country Connecticut 06801	State or Country
Date	Signature
Full Name of Third Joint Inventor Boris M. Balats	Citizenship Russian
RESIDENCE Address – Street Ukhtomskaya St., d. 13, kv. 43	POST OFFICE Address – Street (same as residence)
City (Zip) 111020 Moscow	City (Zip)
State or Country RUSSIA	State or Country
Date	Signature

X Additional inventors are being named on separately numbered sheets attached hereto.

Full Name of Fourth Joint Inventor Oleg V. Sinyavine	Citizenship Russian
RESIDENCE Address – Street 657 North Pastoria Avenue	POST OFFICE Address – Street (same as residence)
City (Zip) Sunnyvale	City (Zip)
State or Country CA 94086 U.S.A.	State or Country
Date 08/31/98	Signature
	
Full Name of Fifth Joint Inventor Alexei B. Virovets	Citizenship Russian
RESIDENCE Address – Street 144 Painter Road	POST OFFICE Address – Street (same as residence)
City (Zip) Southbury	City (Zip)
State or Country Connecticut 06488	State or Country
Date	Signature
	
Full Name of Sixth Joint Inventor Vyacheslav G. Shamshurin	Citizenship Russian
RESIDENCE Address – Street Krasnopolyanskaya St., d. 35, kv. 124	POST OFFICE Address – Street (same as residence)
City (Zip) 141730 Moskovskaya oblast', Lobnya	City (Zip)
State or Country RUSSIA	State or Country
Date	Signature
	
Full Name of Seventh Joint Inventor Aleksandr M. Antropov	Citizenship Russian
RESIDENCE Address – Street	POST OFFICE Address – Street (same as residence)
City (Zip)	City (Zip)
State or Country	State or Country
Date	Signature
	

Full Name of Eighth Joint Inventor	Citizenship
RESIDENCE Address -- Street	POST OFFICE Address -- Street
City (Zip)	City (Zip)
State or Country	State or Country
Date	Signature

UNITED STATES -- PATENT
DECLARATION FOR PATENT APPLICATION

Attorney's Docket No.: P-9701 ISK

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HOWARD N. ARONSON, Reg. No. 27,302; and MYRON

GREENSPAN, Reg. No. 25,680.

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Full Name of First or Sole Inventor Iskander M. Tokmulin	Citizenship Russian
RESIDENCE Address -- Street c/o IPEC Precision, 3 Berkshire Boulevard	POST OFFICE Address -- Street (same as residence)
City (Zip) Bethel	City (Zip)
State or Country Connecticut 06801	State or Country
Date	Signature
Full Name of Second Joint Inventor Igor P. Bagriy	Citizenship Russian
RESIDENCE Address -- Street c/o IPEC Precision, 3 Berkshire Boulevard	POST OFFICE Address -- Street (same as residence)
City (Zip) Bethel	City (Zip)
State or Country Connecticut 06801	State or Country
Date	Signature
Full Name of Third Joint Inventor Boris M. Balats	Citizenship Russian
RESIDENCE Address -- Street Ukhtomskaya St., d. 13, kv. 43	POST OFFICE Address -- Street (same as residence)
City (Zip) 111020 Moscow	City (Zip)
State or Country RUSSIA	State or Country
Date	Signature

X Additional inventors are being named on separately numbered sheets attached hereto.

Full Name of Fourth Joint Inventor Oleg V. Sinyagin	Citizenship Russian
RESIDENCE Address -- Street 657 North Pastoria Avenue	POST OFFICE Address -- Street (same as residence)
City (Zip) Sunnyvale	City (Zip)
State or Country CA 94086	State or Country
Date	Signature
Full Name of Fifth Joint Inventor Alexei B. Virovets	Citizenship Russian
RESIDENCE Address -- Street 144 Painter Road	POST OFFICE Address -- Street (same as residence)
City (Zip) Southbury	City (Zip)
State or Country Connecticut 06488	State or Country
Date	Signature
Full Name of Sixth Joint Inventor Vyacheslav G. Shamshurin	Citizenship Russian
RESIDENCE Address -- Street Krasnopolyanskaya St., d. 35, kv. 124	POST OFFICE Address -- Street (same as residence)
City (Zip) 141730 Moskovskaya oblast', Lobnya	City (Zip)
State or Country RUSSIA	State or Country
Date	Signature
Full Name of Seventh Joint Inventor Alexandre M. Antropov	Citizenship Russian
RESIDENCE Address -- Street 4200 Bay Street, Apt. 177	POST OFFICE Address -- Street (same as residence)
City (Zip) Fremont	City (Zip)
State or Country CA 94538	State or Country
Date 9/3/98	Signature 

Full Name of Eighth Joint Inventor	Citizenship
RESIDENCE Address – Street	POST OFFICE Address – Street
City (Zip)	City (Zip)
State or Country	State or Country
Date	Signature

RECORDATION FORM COVER SHEET
PATENTS ONLY

COPY

To the Honorable Commissioner of Patents and Trademarks:

Please record the attached original documents or copy thereof.

1. Name of conveying party(ies):

Iskander M. TOKMULIN, Igor P. BAGRIY,
Boris M. BALATS, Oleg V. SINIAGUINE,
Alexei B. VIROVETS, Vyacheslav G. SHAMSHURIN
and Alexandre M. ANTROPOV.

2. Name and address of receiving party(ies):

Name: AZ CORPORATION (Aksionerhoe
Obshchestvo "Nauchno-Proizvodstvennaya
"Az")

Street Address: 40 B. Semenovskaya St.,

105023 Moscow RUSSIA

Additional name(s) of
conveying parties attached: Yes No.

Nature of conveyance:

Assignment

Merger

Security Agreement

Change of Name

Other

Execution Dates: August 11, 1997;

Additional name(s)/address(es) attached:

September 2-3, 1997; August 31, 1998; September 8, 1998.

Yes No.

4. Application number(s) or patent number(s): Attorney Docket No.: P-9701 ISK.

If this document is being filed together with a new application,
the execution date of the application is: July 11, 1997.

08/860,763

A. Patent Application No(s).

B. Patent No(s).

Additional numbers attached? Yes No.

5. Name and address of party to whom
correspondence concerning document
should be mailed:

6. Total number of applications and patents
involved:

... ONE application with seven
inventors: This recordation sheet applies to
the names highlighted above (Balats and
and Shamshurin).

7. Total fee (37 CFR 3.41) ... \$ 40.00.

Enclosed

Authorized to be charged to
deposit account.

Already paid October 1997.

8. Deposit Account No.:

(Attach duplicate copy of this page
if paying by deposit account.)

Internal Address: Lackenbach Siegel Building

Street Address: One Chase Road

City: Scarsdale State: NY Zip: 10583

DO NOT USE THIS SPACE

9. Statement and signature.

*To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true
copy of the original document.*

Myron Greenspan

Name of Person Signing

Signature

September 9, 1998

Date

Total number of pages including cover sheet, attachments and document: THREE.

Mail documents to be recorded with required cover sheet information to:

Commissioner of Patents and Trademarks, Box Assignments, Washington, D.C. 20231.

ASSIGNMENT

In consideration of One Dollar (\$1.00), and other good and valuable consideration, the receipt of which is hereby acknowledged, the undersigned:

Iskander M. Tokmulin, Igor P. Bagriy, Boris M. Balats, Oleg V. Sinyagin,
Alexei B. Virovets, Vyacheslav G. Shamshurin and A. M. Antropov

declare that they are citizens of the country of Russia residing respectively at:

c/o IPEC Precision, 3 Berkshire Boulevard, Bethel, CT 06801 (Tokmulin);

c/o IPEC Precision, 3 Berkshire Boulevard, Bethel, CT 06801 (Bagriy);

Ukhtomskaya St., d. 13, kv. 43, 111020 Moscow RUSSIA (Balats);

(Sinyagin);

144 Painter Road, Southbury, CT 06488 (Virovets);

Krasnopolyanskaya St., d.35 kv.124, 141730 Moskovskaya oblast', Lobnya RUSSIA (Shamshurin); and

(Antropov);

Hereby sells, assigns and transfers to: Az Corporation (Aksionerное Общество "Научно-Производственная фирма "Аз"), a corporation of the Country of Russia, hereafter called the "Assignee", having a place of business at 40 B. Semenovskaya St., 105023 Moscow RUSSIA; its successors, assigns and legal representatives, the entire right, title and interest for the United States, in and to any and all improvements which are described and claimed in the

 attached specification executed on _____
X specification Serial No. 08/860,763; filed July 11, 1997
 U.S. Letters Patent No. _____; issued _____

entitled: DEVICE FOR TREATING PLANAR ELEMENTS WITH A PLASMA JET

and in and to said application and all divisional, continuing, substitute, renewal, reissue, and all other applications for Letters Patent which have been or shall be filed in the United States on any of said improvements; and in and to all original and reissued patents which have been or shall be issued in the United States on said improvements;

Agrees that said Assignee may apply for and receive Letters Patent for said improvements in its own name; and that, when requested, without charge to but at the expense of said Assignee, its successors, assigns and legal representatives, to carry out in good faith the intent and purpose of this assignment, the undersigned will execute all divisional, continuing, substitute, renewal, reissue, and all other patent applications on any and all said improvements; execute all rightful oaths, assignments, powers of attorney and other papers; communicate to said Assignee, its successors, assigns and representatives, all facts known to the undersigned relating to said improvements and the history thereof; and generally do everything possible which said Assignee, its successors, assigns or representatives shall consider desirable for aiding in securing and maintaining proper patent protection for said improvements and for vesting title to said improvements and all

applications for patents and all patents on said improvements, in said Assignee, its successors, assigns and legal representatives; and

Covenants with said Assignee, its successors, assigns and legal representatives that no assignment, grant, mortgage, license or other agreement affecting the rights and property herein conveyed has been made to others by the undersigned, and that full right to convey the same as herein expressed is possessed by the undersigned.

The undersigned further declares that all statements made herein of my (our) own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

DATE _____

(L.S.)

DATE _____

(L.S.)

DATE 11.08.97

(L.S.)

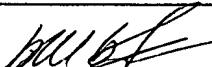
DATE _____

Iskander M. Tokmulin

(L.S.)

DATE _____

Igor P. Bagriy



(L.S.)

DATE _____

Boris M. Balats

(L.S.)

DATE 11.08.97

Oleg V. Sinyagin

(L.S.)

DATE _____

Alexei B. Virovets



(L.S.)

DATE _____

Vyacheslav G. Shamshurin

(L.S.)

A. M. Antropov

4-130, Ilimskaya St.,

Address

127576 Moscow, RUSSIA


WITNESS'S SIGNATURE

Valery V. GUSEV
PRINT WITNESS'S NAME


WITNESS'S SIGNATURE

Alexander E. LEONENKOV
PRINT WITNESS'S NAME


WITNESSES' SIGNATURE

PRINT WITNESS'S NAME

5-317, 3rd Mitinskyi per.,

Address

123222 Moscow, RUSSIA

Address

ref:\grace\pto-form\asn-kato.frm

This assignment should also preferably be signed before a United States Consul. If not, execution by all of the inventor(s) should be witnessed before and by at least two witnesses who sign here.

RECORDATION FORM COVER SHEET
PATENTS ONLY

CCOPY

To the Honorable Commissioner of Patents and Trademarks:

Please record the attached original documents or copy thereof.

1. Name of conveying party(ies):

Iskander M. TOKMULIN, Igor P. BAGRIY,
Boris M. BALATS, Oleg V. SINIAGUINE,
Alexei B. VIROVETS, Vyacheslav G. SHAMSHURIN
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Additional name(s) of
conveying parties attached: Yes No.

Nature of conveyance:

Assignment Merger
 Security Agreement Change of Name
 Other

Execution Dates: August 11, 1997;

Additional name(s)/address(es) attached:

September 2-3, 1997; August 31, 1998; September 8, 1998.

Yes No.

4. Application number(s) or patent number(s): Attorney Docket No.: P-9701 ISK.

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08/860,763

A. Patent Application No(s).

B. Patent No(s).

Additional numbers attached? Yes No.

5. Name and address of party to whom
correspondence concerning document
should be mailed:

6. Total number of applications and patents
involved:

... ONE application with seven
inventors: This recordation sheet applies to
the names highlighted above (Tokmulin, Bagriy
and Virovets).

Name: LACKENBACH SIEGEL MARZULLO
ARONSON & GREENSPAN, P.C.

7. Total fee (37 CFR 3.41) ... \$ 40.00.

Internal Address: Lackenbach Siegel Building

Enclosed

Street Address: One Chase Road

Authorized to be charged to

deposit account.

Already paid October 1997.

City: Scarsdale State: NY Zip: 10583

8. Deposit Account No.: _____

(Attach duplicate copy of this page
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DO NOT USE THIS SPACE

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Myron Greenspan

Name of Person Signing

Signature

September 9, 1998

Date

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Alexei B. Virovets, Vyacheslav G. Shamshurin and A. M. Antropov**

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c/o IPEC Precision, 3 Berkshire Boulevard, Bethel, CT 06801 (Tokmulin);
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Ukhtomskaya St., d. 13, kv. 43, 11020 Moscow RUSSIA (Balats);

(Sinyagin);

144 Painter Road, Southbury, CT 06488 (Virovets);

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Agrees that said Assignee may apply for and receive Letters Patent for said improvements in its own name; and that, when requested, without charge to but at the expense of said Assignee, its successors, assigns and legal representatives, to carry out in good faith the intent and purpose of this assignment, the undersigned will execute all divisional, continuing, substitute, renewal, reissue, and all other patent applications on any and all said improvements; execute all rightful oaths, assignments, powers of attorney and other papers; communicate to said Assignee, its successors, assigns and representatives, all facts known to the undersigned relating to said improvements and the history thereof; and generally do everything possible which said Assignee, its successors, assigns or representatives shall consider desirable for aiding in securing and maintaining proper patent protection for said improvements and for vesting title to said improvements and all

applications for patents and all patents on said improvements, in said Assignee, its successors, assigns and legal representatives; and

Covenants with said Assignee, its successors, assigns and legal representatives that no assignment, grant, mortgage, license or other agreement affecting the rights and property herein conveyed has been made to others by the undersigned, and that full right to convey the same as herein expressed is possessed by the undersigned.

The undersigned further declares that all statements made herein of my (our) own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

DATE 09/02/97

DATE 09/03/97

DATE _____

DATE _____

DATE 09/02/97

DATE _____

DATE _____

WITNESS'S SIGNATURE

PRINT WITNESS'S NAME

WITNESS'S SIGNATURE

PRINT WITNESS'S NAME

WITNESSES' SIGNATURE

PRINT WITNESS'S NAME

This assignment should also preferably be signed before a United States Consul. If not, execution by all of the inventor(s) should be witnessed before and by at least two witnesses who sign here.

ref:\grace\pto-form\asn-kato.frm

RECORDATION FORM COVER SHEET
PATENTS ONLY

To the Honorable Commissioner of Patents and Trademarks:
Please record the attached original documents or copy thereof.

1. Name of conveying party(ies):

Iskander M. TOKMULIN, Igor P. BAGRIY,
Boris M. BALATS, Oleg V. SINIAGUINE,
Alexei B. VIROVETS, Vyacheslav G. SHAMSHURIN
and Alexandre M. ANTROPOV.

2. Name and address of receiving party(ies):

Name: AZ CORPORATION (Aksionernoje
Obshchestvo "Nauchno-Proizvodstvennaya
"Az")

Street Address: 40 B. Semenovskaya St.,
105023 Moscow RUSSIA

Additional name(s) of
conveying parties attached: Yes No.

Nature of conveyance:

Assignment Merger
 Security Agreement Change of Name
 Other _____

Execution Dates: August 11, 1997;

Additional name(s)/address(es) attached:

September 2-3, 1997; August 31, 1998; September 8, 1998.

Yes No.

4. Application number(s) or patent number(s): Attorney Docket No.: P-9701 ISK.

If this document is being filed together with a new application,
the execution date of the application is: July 11, 1997.

08/860,763

A. Patent Application No(s).

B. Patent No(s).

Additional numbers attached? Yes No.

5. Name and address of party to whom
correspondence concerning document
should be mailed:

6. Total number of applications and patents
involved:

... ONE application with seven
inventors: This recordation sheet applies to
the name highlighted above (Siniaguine).

Name: LACKENBACH SIEGEL MARZULLO
ARONSON & GREENSPAN, P.C.

7. Total fee (37 CFR 3.41) ... \$ 40.00.

Internal Address: Lackenbach Siegel Building

Enclosed

Authorized to be charged to
deposit account.

Already paid October 1997.

Street Address: One Chase Road

8. Deposit Account No.: _____

(Attach duplicate copy of this page
if paying by deposit account.)

City: Scarsdale State: NY Zip: 10583

DO NOT USE THIS SPACE

9. Statement and signature.

To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.

Myron Greenspan

Name of Person Signing

Signature

Myron Greenspan September 9, 1998

Date

Total number of pages including cover sheet, attachments and document: FOUR.

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Commissioner of Patents and Trademarks, Box Assignments, Washington, D.C. 20231.

ASSIGNMENT

In consideration of One Dollar (\$1.00), and other good and valuable consideration, the receipt of which is hereby acknowledged, the undersigned, **Iskander M. Tokmulin, Igor P. Bagriy, Boris M. Balats, Oleg V. Sinyagin, Alexei B. Virovets, Vyacheslav G. Shamshurin and Aleksandr M. Antropov**, declare that they are citizens of the country of RUSSIA residing at the following addresses:

Iskander M. Tokmulin: c/o IPEC Precision,, 3 Berkshire Boulevard, Bethel, Connecticut 06801;

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Boris M. Balats: Ukhtomskaya St., d. 13, kv. 43, 111020 Moscow RUSSIA;

Oleg V. Sinyagin: 657 North Pastoria Avenue, Sunnyvale, CA 94086;

Alexei B. Virovets: 144 Painter Road, Southbury, Connecticut 06488;

Vyacheslav G. Shamshurin: Krasnopolyanskaya St., d. 35, kv. 124, 141730 Moskovskaya oblast', Lobnya RUSSIA;

Aleksandr M. Antropov: at present unknown;

Hereby sell, assign and transfer to **AZ CORPORATION**, a corporation of the **RUSSIAN FEDERATION**, hereafter called the "Assignee", having a place of business at **40 b. Semenovskaya Street, Moscow 105023 RUSSIA**; its successors, assigns and legal representatives, the entire right, title and interest for the United States, in and to any and all improvements which are described and claimed in the

 attached specification executed on _____
X specification Serial No. 08/860,763; filed July 11, 1997
 U.S. Letters Patent No. _____; issued _____

entitled: DEVICE FOR TREATING PLANAR ELEMENTS WITH A PLASMA JET,

Assignment for U.S. Patent Application Serial No. 08/860,763 for Tokmulin et al.
Page 2 of 3

and in and to said application and all divisional, continuing, substitute, renewal, reissue, and all other applications for Letters Patent which have been or shall be filed in the United States on any of said improvements; and in and to all original and reissued patents which have been or shall be issued in the United States on said improvements;

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DATE _____

(L.S.)

Iskander M. Tokmulin

DATE _____

(L.S.)

Igor P. Bagriy

DATE _____

(L.S.)

Boris M. Balats

Assignment for U.S. Patent Application Serial No. 08/860,763 for Tokmulin et al.
Page 2 of 3

DATE 08/31/98


Oleg V. Sinyagin SINYAGINE
OS. (L.S.)

DATE _____

Alexei B. Virovets (L.S.)

DATE _____

Vyacheslav G. Shamshurin (L.S.)

DATE _____

Aleksandr M. Antropov (L.S.)

WITNESS'S SIGNATURE

Address

PRINT WITNESS'S NAME

WITNESS'S SIGNATURE

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Page 1 of 3

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⁴²
Alexandre M. Antropov: 2400 Bay Street, Apt. 177, Fremont, CA 94538;

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DATE _____ (L.S.)

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DATE _____ (L.S.)

Igor P. Bagriy

DATE _____ (L.S.)

Boris M. Balats

Assignment for U.S. Patent Application Serial No. 08/860,763 for Tokmulin et al.
Page 2 of 3

DATE _____

(L.S.)

Oleg V. Sinyagin

DATE _____

(L.S.)

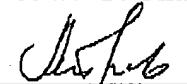
Alexei B. Virovets

DATE _____

(L.S.)

Vyacheslav G. Shamshurin

DATE 9/8/1998



(L.S.)

Aleksandr M. Antropov

WITNESS'S SIGNATURE

Address

PRINT WITNESS'S NAME

WITNESS'S SIGNATURE

Address

PRINT WITNESS'S NAME

РСТ RU 95/00063
RU 95/00063

КОМИТЕТ РОССИЙСКОЙ ФЕДЕРАЦИИ ПО ПАТЕНТАМ И ТОВАРНЫМ ЗНАКАМ
(РОСПАТЕНТ)

рег.№.20/14-129

" 09 " июня 1995 г.

REC'D 05 JUL 1995
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С П Р А В К А

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PRIORITY DOCUMENT

Название изобретения: Установка для плазмоструйной обработки пластин.

Заявитель: Акционерное общество
Научно-производственная фирма "АЗ".

Действительные авторы: ТОКМУЛИН Искандер Маликович,
БАГРИЙ Игорь Петрович,
БАЛАЦ Борис Михайлович,
СИНЯГИН Олег Вячеславович,
ВИРОВЕЦ Алексей Борисович,
ШАМШУРИН Вячеслав Геннадьевич,
АНТРОПОВ Александр Михайлович.



По поручению Председателя Роспатента

В.Ю.Джермакян

МКИ

НО1Л21/302

Установка для плазмоструйной
обработки пластин

Предлагаемое изобретение относится к области плазменной технологии и может быть использовано в электронной и электротехнической промышленности при обработке плоских изделий, например, полупроводниковых пластин, подложек печатных плат, компакт-дисков и других изделий.

Известна установка для исследования взаимодействия плазмы с поверхностью, включающая генератор плазмы, источник его питания, систему перемещения генератора плазмы, систему перемещения образцов, систему газораспределения и систему управления /1/.

Данная установка имеет следующие недостатки.

Отсутствие системы быстродействующей загрузки-выгрузки обрабатываемых образцов приводит к большим затратам времени, а значит и энергии генератора плазмы, расходуемой впустую при смене обрабатываемых образцов-пластин.

Отсутствие возможности одновременно - последовательной обработки сразу нескольких пластин-образцов снижает производительность.

Наличие в установке множества контрольно-измерительных средств, которые не позволяют эффективно производить многократно повторяющуюся обработку образцов по жестко заданному циклу, однозначно определяют данную установку как чисто исследовательскую.

Все вышесказанное приводит к тому, что она не может быть применена в условиях серийного производства.

Известно также устройство для плазмоструйной обработки пластин при атмосферном давлении, содержащее замкнутую камеру с системой газообмена, генератор плазменной струи, систему подачи газа, систему управления, держатель пластины, который закреплен на кронштейне, жестко связанном с вертикальным валом привода его поворота. Генератор плазменной струи смонтирован с возможностью перемещения в вертикальном и горизонтальном направлениях, а его плазменная струя обращена вниз. Держатель пластины выполнен в виде горизонтальной площадки с вакуумными присосками для удержания пластины /2/.

Данное устройство как наиболее близкое по технической сущности к заявляемому, выбрано за прототип.

Недостатками данного устройства являются низкая эффективность использования энергии и недостаточное качество, получаемое при обработке пластин с размерами, большими, чем попечный размер плазменной струи. Это обусловлено тем, что плазменной струей проходят вдоль пластин несколько раз, сдвигая генератор плазменной струи поперек пластины после каждого прохода на величину, не превышающую размер струи. При этом пластина после каждого прохода должна остыть, чтобы тепло в ней не накапливалось и каждое последующее воздействие протекало в одинаковых воспроизводимых тепловых условиях. Каждая такая пауза длится несколько секунд и в это время энергия плазмы расходуется напрасно. Таким образом, чем больше размер пластин, тем меньше эффективность использования энергии в данной установке.

К снижению эффективности использования энергии приводят также затраты времени на смену пластин на держателе.

К недостаткам следует отнести и то, что расположение генератора плазменной струи струей вниз вызывает необходимость принятия мер по обеспечению охлаждения генератора плазменной струи от перегрева идущими вверх горячими газами, образующимися в процессе работы генератора плазмы.

Указанные недостатки устранены в установке для плазмоструйной обработки пластин, которая включает замкнутую камеру с системой газообмена, систему подачи газа, установленные в замкнутой камере держатель пластин, связанный с приводом углового перемещения, генератор плазменной струи, обращенный к держателю пластин, выполненному в виде горизонтальной площадки, снаб-

женной установленными в замкнутой камере, по крайней мере, одним дополнительным держателем и общим приводом вращения держателей, исполнительный механизм которого соединен с каждым из них, манипулятором и накопителями пластин, смонтированными вне замкнутой камеры, при этом замкнутая камера выполнена с окном, в котором смонтирована подвижная шторка, а манипулятор размещен с возможностью взаимодействия с держателями пластин через окно, при этом каждый держатель снабжен ограничителями по краям, а в горизонтальной площадке держателя выполнено, по крайней мере, три вихревых камеры и три тангенциальных канала, причем оси вихревых камер перпендикулярны горизонтальной площадке держателя, а каждая из вихревых камер выполнена с открытой частью, расположенной на горизонтальной торцевой поверхности держателя, связана с тангенциальным каналом, соединенным с системой подачи газа, и размещена на держателе так, что вихревые потоки, образованные ими, обеспечивают в каждой точке поверхности обрабатываемой пластины выполнение условия: $Q_0 = Q_1 + Q_2$, где:

Q_0 - количество энергии, получаемое точкой поверхности пластины;

Q_1 - количество энергии, идущее на нагрев пластины в данной точке;

Q_2 - количество энергии, идущее на удаление материала с поверхности пластины в данной точке, причем, ограничители на держателях выполнены в виде стержней, установленных под углом $\alpha > 90^\circ$ к горизонтальной площадке, а их длина l выбирается из условия: $2l \sin(\alpha - 90^\circ) > \Delta$, где

Δ - максимальное отклонение от осесимметричного расположения пластины в накопителе.

Технический результат использования предложенной установки обеспечивается следующим:

Снабжение установки общим приводом вращения держателей, установленным внутри замкнутой камеры, исполнительный механизм которого соединен с каждым из держателей, существенно повышает производительность установки.

Размещение манипулятора с накопителями пластин вне замкнутой камеры позволяет уменьшить объем камеры и одновременно повысить производительность обработки за счет уменьшения времени загрузки-выгрузки пластин.

Применение держателей пластин, имеющих, по крайней мере, три вихревые камеры и три тангенциальных канала с осями вихревых камер, перпендикулярными горизонтальной площадке держателя, где каждая вихревая камера связана с тангенциальным каналом, соединенным с системой подачи газа, позволяет достичь устойчивого удержания обрабатываемой пластины вблизи держателя с газовым гагором без касания пластины и держателя, что, в свою очередь, позволяет улучшить качество обработки за счет отсутствия следов касания (царапин).

Расположение каждой из вихревых камер на держателе таким образом, что образованные ими вихревые потоки обеспечивают в каждой точке поверхности обрабатываемой пластины выполнение условия: $Q_0 = Q_1 + Q_2$, где:

Q_0 - количество энергии, получаемое точкой поверхности пластины;

Q1 - количество энергии, идущее на нагрев пластины в данной точке ;

Q2 - количество энергии, идущее на удаление материала с поверхности пластины в данной точке, позволяет получить более равномерную, а значит - более качественную обработку пластины.

Это обусловлено тем, что каждая вихревая камера, создавая газовый вихрь, обеспечивает не только условие удержания пластины около держателя, но и охлаждение отдельных областей обрабатываемой пластины. Поскольку в процессе обработки разные точки поверхности обрабатываемой пластины находятся в разных тепловых условиях , то, исходя из баланса энергии, вихревые потоки позволяют создать условия для выравнивания Q2 во всех точках пластины.

Использование ограничителей на держателях в виде стержней, установленных под углом $\alpha > 90^\circ$ к горизонтальной плоскости держателя, длина ℓ которых выбирается из условия: $2\ell \sin(\alpha - 90^\circ) > \Delta$, где:

Δ - максимальное отклонение от осесимметричного расположения пластины в накопителе, позволяет обеспечить необходимую точность при загрузке-выгрузке пластины без применения дополнительных средств центрования.

Сущность предлагаемого изобретения поясняется чертежами, где

на фиг.1 - установка для плаズмоструйной обработки пластины;

фиг.2 - вид А по фиг.1;

Фиг.3 - кинематическая схема исполнительного механизма общего привода вращения держателей;

Фиг.4 - держатель пластин;

Фиг.5 - сечение А-А по фиг.4.

Установка содержит замкнутую камеру 1, систему 2 газообмена, систему 3 электропитания, систему 4 подачи газа, систему 5 управления. Замкнутая камера 1 выполнена с окном 6, в котором установлена подвижная шторка 7 с приводом 8. Внутри замкнутой камеры на основании 9 размещены генератор 10 плааменной струи 11, привод 12 углового перемещения, вертикальный вал 13 которого связан с держателями 14. Генератор 10 плааменной струи 11 обращен в сторону держателей 14 и установлен на основании 9 на регулируемой по высоте опоре 15 так, что ось плааменной струи 11 и собственные оси каждого держателя 14 равноудалены от оси вертикального вала 13 привода углового перемещения 12. А держатели 14 выполнены в виде горизонтальных площадок 16 с ограничителями 17. Ограничители 17 выполнены в виде стержней, например, цилиндрических. Горизонтальные площадки 16 получают вращение вокруг своих осей от привода 18, например, посредством исполнительного механизма 19 путем последовательного взаимодействия его зубчатых колес 20, 21, 22 и шкивов 23 и 24. На горизонтальных площадках 16 выполнены вихревые камеры 25, каждая из которых выполнена с открытой частью, расположенной на горизонтальной торцевой поверхности держателя 14 и связана с тангенциальным каналом 26, соединенным с системой 4 подачи газа. Вне замкнутой камеры 1 на основании 9 установлены манипулятор 27 и накопители 28 пластин 29.

Работает установка следующим образом.

В исходном состоянии один из накопителей 28 с пластинами 29, а другой - без.

Манипулятором 27 осуществляют захват нижней пластины 29 в накопителе 28 и ее перемещение через окно 6 /открыв приводом 8 шторку 7/ внутрь замкнутой камеры 1.

В этом момент первый из держателей 14 находится в положении загрузки. Манипулятором 27 подают пластину 29 в положение под горизонтальную площадку 16 первого держателя 14.

Включением системы 4 подачи газа в вихревых камерах 26 держателя 14 создаются вихри 30, обеспечивающие удержание пластины 29 на расстоянии 0,5 - 1,0 мм от торцевой горизонтальной поверхности площадки 16 держателя 14. В этот момент манипулятор 27 отпускает пластину 29. Пластина загружена.

Осуществляют загрузку следующей пластины.

В предложенном примере установка для плазмоструйной обработки пластин выполнена с пятью держателями пластин, расположеннымными под углом 72° в горизонтальной плоскости друг относительно друга. Подачу следующего держателя в зону загрузки осуществляют посредством привода 12 углового перемещения держателя 14.

После загрузки всех держателей манипулятор 27 выводят из замкнутой камеры 1 и приводом 8 закрывают шторку 7. Подают в камеру необходимый газ.

Генератор 10 плазменной струи 11 при помощи опоры 15 устанавливают относительно поверхности обрабатываемой пластины 29 на высоту, соответствующую технологическому процессу.

Включением привода 18 начинают вращать держатели 14 вместе с пластинами 29 вокруг их осей, задавая динамику движения пластины 29 от системы 5 управления. Включают генератор 10 плазменной струи 11, привод 12 углового перемещения держателей и проводят обработку.

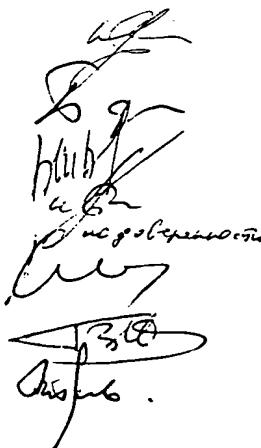
После заданного количества взаимодействий пластины 29 с плазменной струей 11 генератора 10 привод 12 по заданной программе от системы 5 управления останавливают так, чтобы ни одна из пластин 29 на держателях 14 не попала в зону воздействия плазменной струи генератора.

Отключают вращение привода 18 и генератор 10 плазменной струи.

Далее повторяют цикл со следующей партией пластин.

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Источники информации, принятые во внимание при составлении данной заявки:

1. Тезисы докладов 10 Всесоюзной конференции "Генераторы

ниакотемпературной плаазмы", часть 2, Минск, изд. ИТМО АН
БССР, 1986, с.135 Кулик П.П. и др.

2. "Электронная техника", сер. 10 "Микроэлектронные уст-
ройства", 1988, выпуск 5(71), с.30 Агриков Ю.М. и др. /прототип/

Формула изобретения

Установка для плазмоструйной обработки пластин, включающая замкнутую камеру с системой газообмена, систему подачи газа, установленный в замкнутой камере держатель пластин, связанный с приводом углового перемещения и генератор плазменной струи, обращенный к держателю пластин, выполненному в виде горизонтальной площадки, отличающаяся тем, что она снабжена установленным в замкнутой камере и связанным с приводом углового перемещения, по крайней мере, одним дополнительным держателем и приводом вращения держателей, исполнительный механизм которого соединен с каждым из них, манипулятором и накопителями пластин, смонтированными вне замкнутой камеры, при этом замкнутая камера выполнена с окном, в котором смонтирована подвижная шторка, а манипулятор размещен с возможностью взаимодействия с держателями пластин через окно, при этом каждый держатель пластин снабжен ограничителями по краям, а в горизонтальной площадке держателя пластин выполнено, по крайней мере, три вихревых камеры и три тангенциальных канала, причем оси вихревых камер перпендикулярны горизонтальной площадке держателей пластин, а каждая из вихревых камер выполнена с открытой частью, расположеннойной на горизонтальной торцевой поверхности держателя, связана с тангенциальным каналом, соединенным с системой подачи газа, и размещена на держателе так, что вихревые потоки, образованные ими, обеспечивают в каждой точке по-

верхности обрабатываемой пластины, выполнение условия:

$Q_0 = Q_1 + Q_2$, где:

Q_0 - количество энергии, получаемое точкой поверхности пластины;

Q_1 - количество энергии, идущее на нагрев пластины в данной точке;

Q_2 - количество энергии, идущее на удаление материала с поверхности пластины в данной точке,

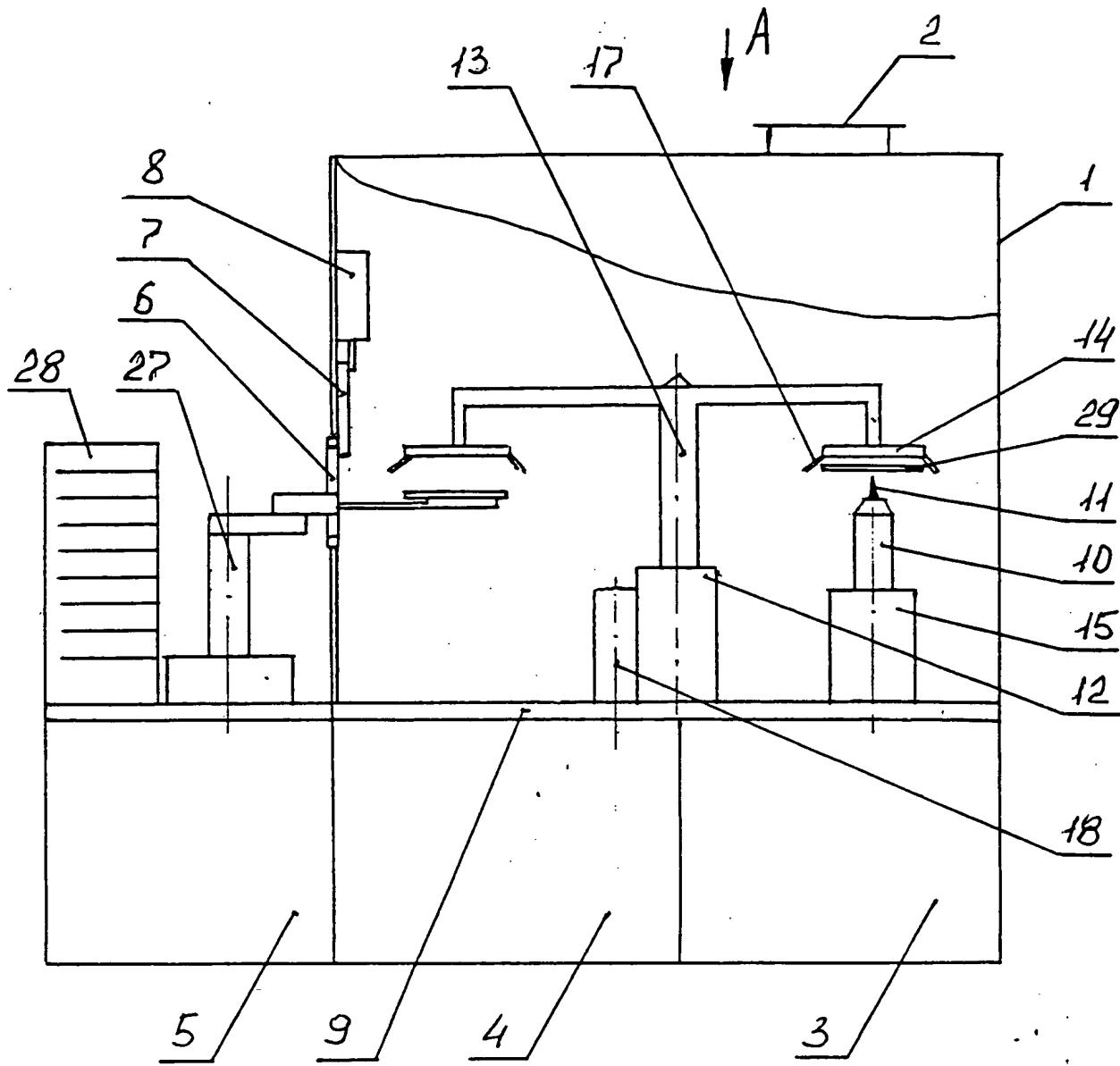
причем, ограничители на держателях пластин выполнены в виде стержней, установленных под углом $\alpha > 90^\circ$ к горизонтальной площадке держателя пластин, а их длина l выбирается из условия: $2l \sin(\alpha - 90^\circ) > \Delta$, где

Δ - максимальное отклонение от осесимметричного расположения пластин в накопителе.

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Установка для плазмо-струйной обработки пластин

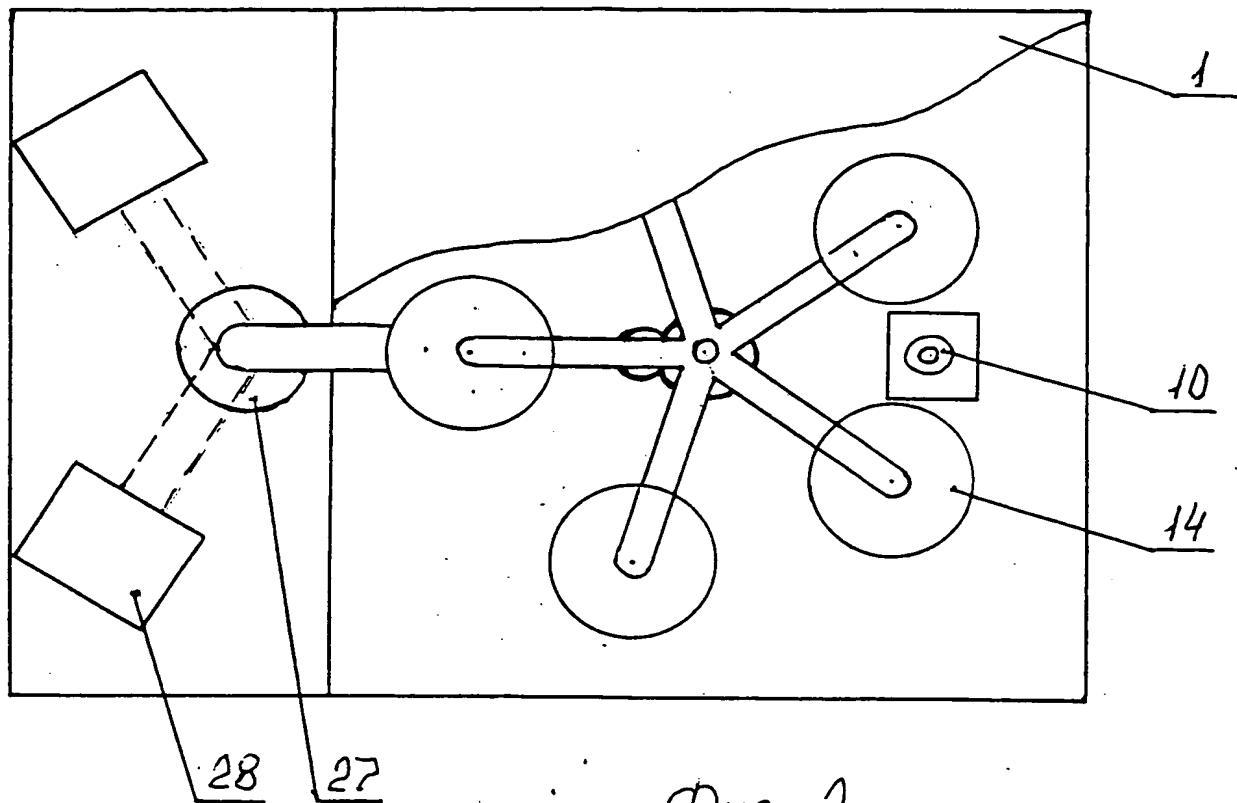


Фиг. 1

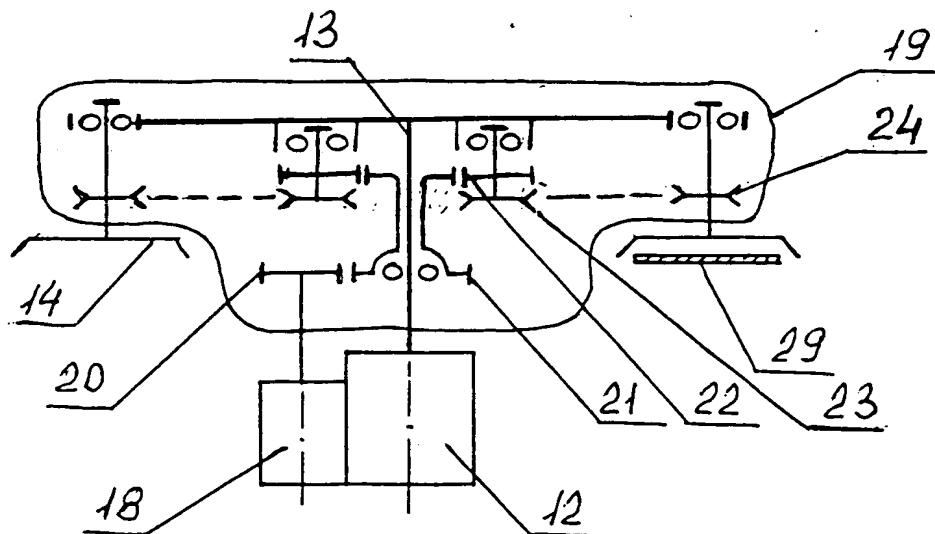
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Шамшурин В.Г.

Установка для плазмо-струйной обработки пластин



Фиг. 2

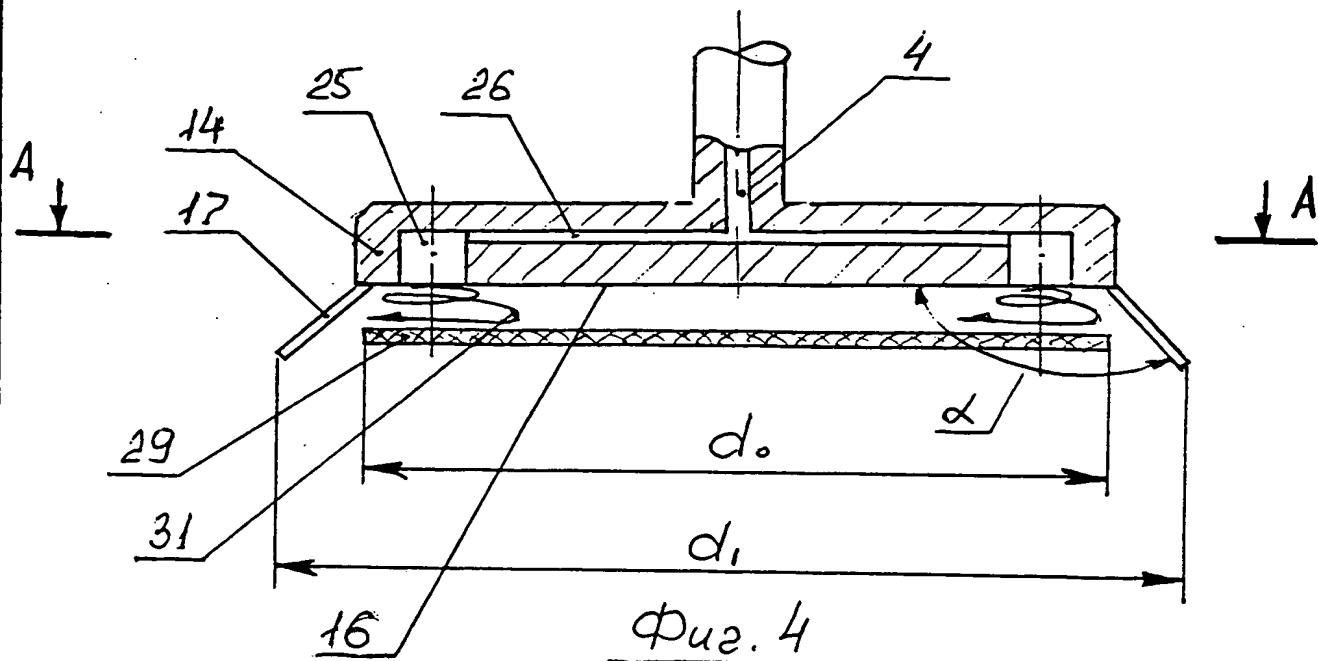


Авторы:

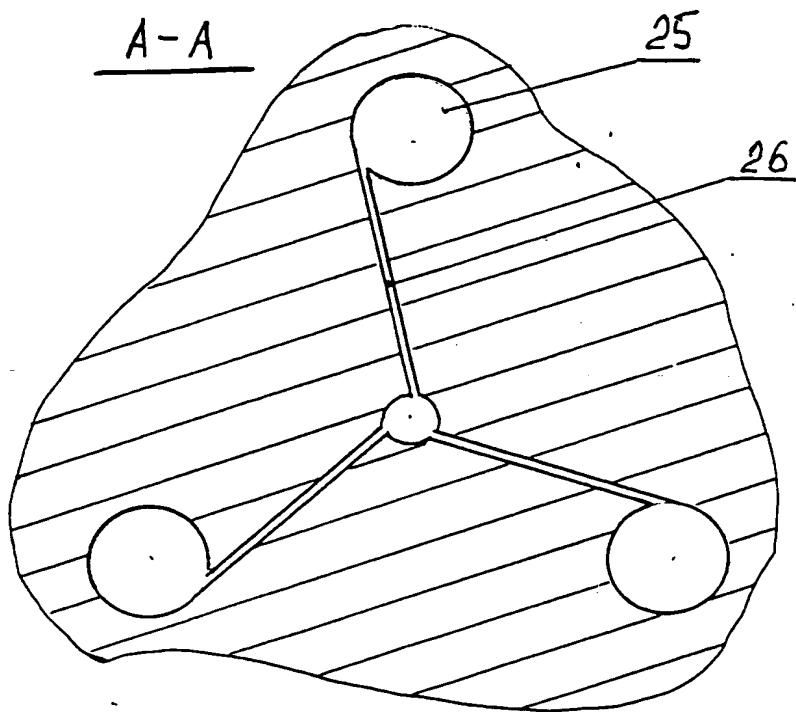
Фиг. 3

Дніпров А.М.
Багрій И.П.
Балаш Б.М.
Синягин Д.В.
Токмұлін И.М.
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Установка для плазмо-струйной обработки пластин



Фиг. 4



Фиг. 5

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Реферат

"Установка для плазмоструйной обработки пластин"

Использование: в технологии плазменной обработки плоских изделий, например, пластин в электронной и электротехнической промышленности.

Сущность изобретения: установка для плазмоструйной обработки пластин включает установленные в замкнутой камере 1 привод 12 углового перемещения держателей 14, снабженных общим приводом 18 их вращения, генератор 10 плазменной струи и установленные вне замкнутой камеры 1 манипулятор 27 и накопители 28 пластин 29.

Обрабатываемая пластина 29 берется манипулятором 27 из накопителя 28 и устанавливается в держатель 14, который, перемещаясь вместе с пластиной 29, проходит над генератором 10 плазменной струи, которая обрабатывает пластину.

Цикл может повторяться заданное количество раз. 5 илл.